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Protocols for Research Vessel Cruises within the Gulf Region (Demersal Fish) (1970-1987)

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SUMMARY

Hurlbut,T. and D.Clay (eds) 1990. Protocols for Research Vessel Cruises within the Gulf Region (Demersal Fish) (1970-1987). Can. MS Rep. Fish. Aquat. Sci. No. 2082: 143 p.

Canadian government research surveys for demersal fish species have been conducted since the mid-1950's in the southern Gulf of St. Lawrence. Standardized, stratified random inventory surveys were initiated in September 1970 in the southern Gulf of St. Lawrence using the RV E.E. Prince. Like other surveys in the Atlantic zone, this was designed to provide indices of abundance to monitor demersal fish stocks of the northwest Atlantic.

This survey was conducted annually with the same vessel and gear until the mid 1980's. In 1985 the RV Lady Hammond replaced the RV E.E. Prince for the southern Gulf of St. Lawrence survey. The introduction of standardized surveys in 1970 was accompanied by a complete revision of recording formats, introduction of at-sea standing orders or protocols, and a revision of computer methods and formats. These methods, protocols and formats were applied to all demersal fish cruises including special purpose cruises conducted by the Department of Fisheries and Oceans. There have been significant changes in many of the details of data collection, recording and storage. These have have continued to evolve in recent years. These changes have been due in part to a Departmental reorganization in 1982 which coincided with the rapid evolution of microcomputers and their application in the new Gulf Region. Although many changes have occurred the basic aims and field protocols of the surveys have not changed.

This manual updates an earlier version (Koeller, MS 1981) used by Marine Fish Division, Resource Branch, Maritimes Region. The present manual is a composite of the earlier version and others and is meant to outline standard demersal fish research sampling protocols, coding, and data definitions used within the Marine and Anadromous Fisheries Division, Science Branch, Gulf Region from 1983 to 1987 (it also includes the protocols used prior to 1983). This manual is designed as an historical guide to the random stratified surveys of 1970 to 1983 and the fixed station surveys of 1984 to 1987. The random stratified surveys conducted since 1988 are similar in design and protocols but this guide does not attempt to address these recent surveys.

RESUME

Hurlbut,T. and D.Clay (eds) 1990. Protocols for Research Vessel Cruises within the Gulf Region (Demersal Fish) (1970-1987). Can. MS Rep. Fish. Aquat. Sci. No. 2082: 143 p.

Le gouvernement canadien effectue le recensement des espèces de poissons démersaux du sud du golfe du Saint-Laurent depuis le milieu des années 1950. Par ailleurs, en septembre 1970, on a mis au point une forme normalisée de relevé aléatoire par strates, pour l'ensemble du sud du golfe du Saint-Laurent, en utilisant le navire de recherches E.E. Prince. Comme d'autres recensements dans la zone de l'Atlantique, ce relevé était conçu pour fournir des indice d'abondance des stocks de poissons démersaux dans le nord-ouest de l'Atlantique.

Ce recensement a été effectué chaque année avec le même bateau et les mêmes engins jusqu'au milieu des années 1980. En 1985, le E.E. Prince est remplacé par le Lady Hammond pour l'inventaire du sud du golfe du Saint-Laurent. L'introduction de relevés normalisés en 1970 a été accompagnée d'une révision complète des formats d'enregistrement, de l'établissement d'ordres permanents ou de protocoles pour les travaux en mer, ainsi que d'une révision des méthodes et formats informatiques. Ces méthodes, protocoles et formats ont été appliqués à toutes les études de poissons démersaux, y compris les excursions à but spécial, qu'a mené le

Ministère des Pêches et des Océans. Il y a eu d'importants changements dans de nombreux détails touchant la collecte, la déclaration et l'emmagasinage des données. Et ces détails ont continué d'évoluer au cours des dernières années. Tous ces changements sont dus en partie à la réorganisation du Ministère en 1982, qui coincidait avec l'évolution rapide des micro-ordinateurs et de leurs applications dans la nouvelle région du Golfe. Malgré tous ces nombreux changements, les objectifs de base et les protocoles des travaux sur le terrain n'ont pas changé.

Le présent guide est une mise à jour d'une version précédente (Koeller, MS 1981), qu'utilisait la Division des poissons de mer, Direction des ressources, région des Maritimes. Outre la version précédente, ce guide regroupe d'autres versions également et a pour objet de normaliser les protocoles d'échantillonnage des poissons démersaux ainsi que les codes et les définitions des données dont on s'est servi dans l'ensemble de la Division des poissons de mer et anadromes, à la Direction des sciences, région du Golfe, de 1983 à 1987 (il énonce également les protocoles utilisés avant 1983). Le présent document est aussi un guide historique sur les relevés stratifiés aléatoires de 1970 à 1983, ainsi que les relevés en stations fixes de 1984 à 1987. Les relevés stratifiés aléatoires effectués depuis 1988 sont aussi semblables sur le plan de la conception et des protocoles mais nous ne les touchons pas dans le présent guide.

Acknowledgements

This document was prepared as an update to the "Manual for Groundfish Survey Personnel: Cruise Preparation, Conduct and Standing Orders" by P.A. Koeller (1981). Our intention was to prepare a manual recognizing the many changes in survey and sampling methodology that have occurred since 1981, not the least of which were due to the reorganization of the then Maritimes and Newfoundland Regions into the current Scotia-Fundy, Gulf, Newfoundland and Quebec Regions.

Much of the information in this report was taken from Koeller's report and many figures and tables have been selected from recent literature. We have attempted to provide proper accreditation wherever this occurred.

Disclaimer

The mention of any commercial brandnames or products does not imply endorsement or recommendation by the editors or the Department of Fisheries and Oceans.

I. INTRODUCTION

A. General

Canadian government research surveys for demersel (groundfish) species have been conducted since the mid-1950's in the southern Gulf of St. Lawrence, on the Nova Scotia Shelf and in the Bay of Fundy. These areas were within what was then the Maritimes Region of the present Department of Fisheries and Oceans. Similar surveys were carried out within the larger area of the present Newfoundland Region. Standardized, stratified random inventory surveys were initiated in July 1970 on the Nova Scotia Shelf and in the Bay of Fundy using the research vessel (RV) A.T. Cameron. In September 1970, a similar survey program was begun in the southern Gulf of St. Lawrence using the RV E.E. Prince. Initially these surveys were designed to provide indices of abundance to monitor demersal fish stocks of the northwest Atlantic. These surveys were designed in cooperation with several nations to provide compatible survey methodology for the ICNAF (International Commission of Northwest Atlantic Fisheries) convention area (Anon, 1969). ICNAF has since been reorganized and is now known as NAFO (Northwest Atlantic Fisheries Organization).

With the extension of jurisdiction to 200 nautical miles (371 km) in 1976 and the subsequent requirement for management of individual species and stocks, these surveys have taken on a new importance. They are now used in the analytical assessment process as indices of stock abundance (biomass) and population structure.

These surveys were conducted annually with the same vessels and gear until the late 1970's. In 1980 the RV A.T. Cameron was retired from the Nova Scotia Shelf and Bay of Fundy survey and replaced by the charter vessel RV Lady Hammond and subsequently by the Canadian government vessel the RV Alfred Needler. In 1985 the RV Lady Hammond replaced the RV E.E. Prince for the southern Gulf of St. Lawrence survey. Prior to 1970 surveys were conducted for a variety of purposes, the nature and detail of the data gathered varied, depending upon these purposes. However, standard recording formats were adopted in 1958 and the data were computerized thereafter. The introduction of standardized surveys in 1970 was accompanied by a complete revision of recording formats, introduction of at-sea standing orders or protocols, and a revision of computer methods and formats. These methods, protocols and formats were applied to all demersal fish cruises including special purpose cruises occurring within the Maritimes Region. The reorganization of the Department of Fisheries and Oceans Maritime and Newfoundland Regions into the four present regions (Newfoundland, Scotia-Fundy, Gulf and Quebec) in 1982 coincided with the rapid evolution of microcomputers and thus although the basic structure of the surveys has not changed, many of the details of data collection, recording and storage have continued to evolve in recent years.

This manual updates an earlier version (Koeller, MS 1981) used by Marine Fish Division, Resource Branch, Maritimes Region, for personnel involved in demersal fish surveys. The present manual is a composite of the earlier version and others and is meant to outline standard demersal fish research sampling protocols, coding, and data definitions used within the Marine and Anadromous Fisheries Division, Science Branch, Gulf Region from 1983 to 1987 (it also includes the protocols used prior to 1983).

A history of demersal fish surveys and their applications in the Maritimes Region was given in Halliday and Koeller (1981). The "Manual on groundfish surveys in the Northwest Atlantic" (W. G. Doubleday, editor, 1981) gives a more general account of survey methods used by various agencies and countries in the area.

In 1985 a symposium (Special Session on Biological Surveys) sponsored by the NAFO Scientific Council reviewed survey techniques used by many countries in various oceans of the world. In addition, it reviewed the important requirements common to all trawling surveys.

B. Pre-1983 Surveys

The statistical advantages of a stratified random sampling design have been discussed previously (Doubleday MS 1976; Grosslein MS 1969, MS 1974; Halliday and Kohler MS 1971). In practice, stations were selected by subdividing the area under investigation into strata which were broadly related to fish distribution and particularly to depth. In these investigations, strata were composed of areas with similar depth ranges (ie. less than 50, 51 to 100 and 101 to 200 fathoms) (less than 92 m, 93 to 183 m and 184 to 366 m) (Figure 1.1).

The number of stations or individual sampling sites allocated to each stratum were roughly proportional to stratum surface area, with larger strata receiving more stations.

Table 1.1 Width and surface area covered by three groundfish trawls used in surveys of the southern Gulf of St. Lawrence.

Trawl	**Trawl Width (m)**	**Surface Area Covered During a Standard (30 minute) Tow**	
		(nm)^2	**(km)^2**
Yankee 36	10.668	.019	.035
Western IIA	12.497	.022	.041
50' Flounder	8.500	.015	.027

Strata were divided into units of 5' latitude x 10' longitude known as a major sampling unit. Each major sampling unit was further subdivided into 10 minor sampling units (2 1/2' latitude x 2' longitude) which are approximately as long as the distance trawled during one tow (Figure 1.2). Sampling sites were chosen randomly from the major sampling units without replacement; then one minor sampling unit was chosen randomly within each selected major sampling unit (not strictly a random sampling scheme).

The surface area covered by one standard survey tow depends upon the fishing gear used (for the "Yankee 36" trawl the area covered during a standard survey set is 0.035km^2) (see Tables 1.1 and 1.2). The number of trawlable units (size of survey area/area of one tow) is also affected by the proposed duration of the tow .

Full hydrographic observations were completed at fishing stations chosen to approximate standard transects across the survey area.

Note: One difficulty with this approach is the large number of samples (sets) that are required to reduce the inherent variability found in the marine environment. Limited resources dictated a maximum of 60 to 65 sets to cover the 24 strata. The RV E.E. Prince was operationally restricted to fishing during daylight hours only.

C. Post-1982 Surveys

Since the formation of the Gulf Region in 1982, the annual fall survey of the southern Gulf (essentially planned in 1970 as a cod/plaice survey) has evolved within the constraints of maintaining a compatible time series for stock assessment purposes. The Gulf Region made the choice to conduct data entry, editing and data analysis with microcomputers rather than on mainframe computers as was the previous practice. This conversion was completed by the end of 1985. Because of this decision some features have been altered in the data collection, data entry and edit facilities, and also in the data analysis procedures. Most existing aspects of the pre-1983 survey protocols have remained unchanged or maintained within an expanded series.

A change in the sampling routine for flatfish enabled an increase in the number of stations from between 60 to 65 to between 80 to 90. And the subsequent change of vessels to the 24 hour RV Lady Hammond increased the number of sets to between 180 and 190. This has decreased the sampled area to unsampled area ratio from 1:17,560 to 1:5,128 (Table 1.3).

A major change has occurred in the hydrographic aspects of this survey. Salinity sampling was discontinued in 1983. Mechanical bathythermograph (MBT) casts were conducted at all stations in the southern Gulf from 1983 to 1988. In 1989 an (MS-DOS compatible) electronic temperature and depth recorder was used to collect the temperature profile data (MBT's are now used as a backup in case of equipment failure).

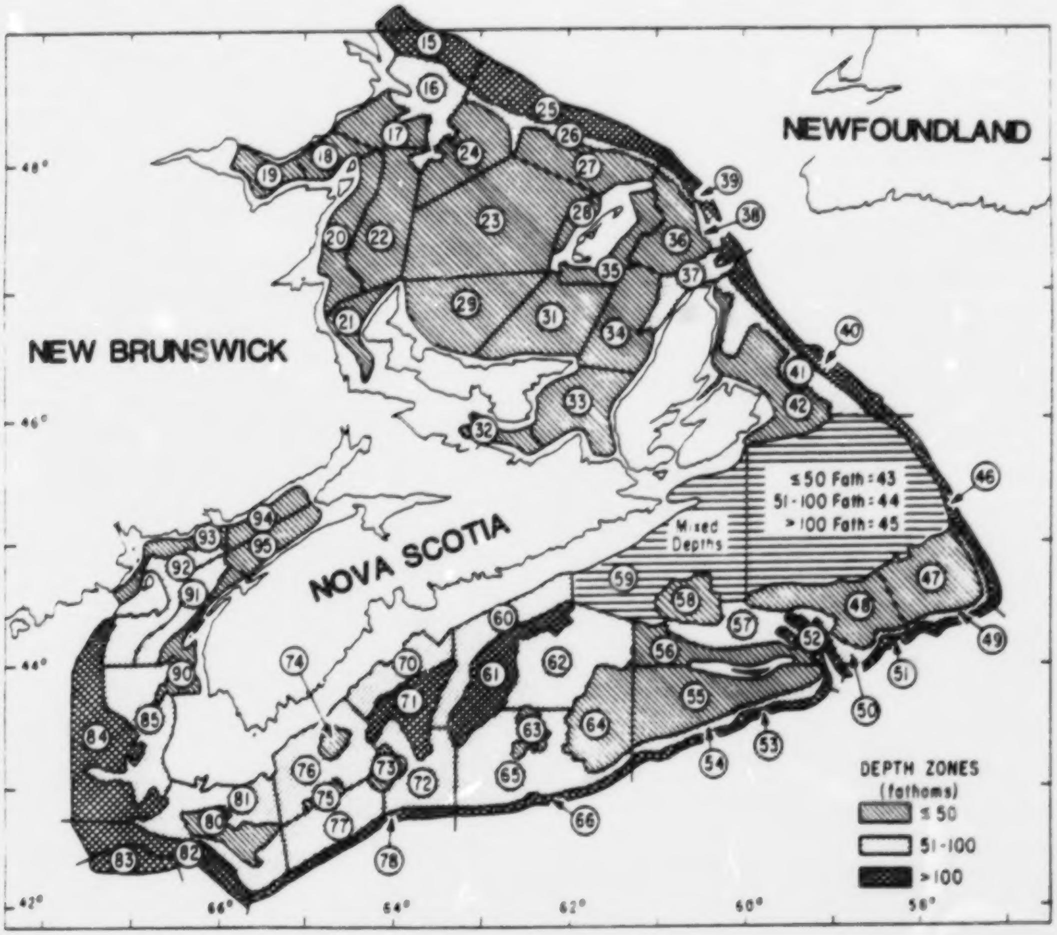
Table 1.2. Description of strata used for surveying the southern Gulf of St. Lawrence.

			Vessel		**EE Prince**	**Lady Hammond**	**Navicula**
			Gear		**Yankee 36**	**Western IIA**	**50' Flounder**
Stratum #	**Depth Range**		**Surface Area**		**Sample Units**	**Sample Units**	**Sample Units**
	(fath)	**(m)**	**(nm)^2**	**(km)^2**			
401	<50	<92	344	638	34162	29163	42875
402	<50	<92	452	838	44888	38319	56337
403	<50	<92	113	210	11222	9580	14084
415	>100	>183	764	1416	75872	64769	95224
416	51-100	93-183	1067	1978	105963	90456	132990
417	<50	<92	525	973	52137	44507	65435
418	<50	<92	394	730	39128	33402	49108
419	<50	<92	443	821	43994	37556	55215
420	<50	<92	773	1433	76766	65532	96346
421	<50	<92	329	610	32673	27891	41006
422	<50	<92	1244	2306	123541	105461	155051
423	<50	<92	3211	5953	318882	272216	400215
424	<50	<92	1050	1947	104275	89015	130871
425	>100	>183	630	1168	62565	53409	78523
426	51-100	93-183	388	719	38532	32893	48360
427	<50	<92	951	1763	94443	80622	118531
428	<50	<92	202	375	20060	17125	25176
429	<50	<92	1696	3144	168428	143780	211387
431	<50	<92	1419	2631	140920	120297	176863
432	<50	<92	301	558	29892	25518	37516
433	<50	<92	1188	2203	117979	100714	148070
434	<50	<92	1211	2245	120263	102664	150937
435	<50	<92	639	1185	43459	54172	54544
436	<50	<92	958	1776	95138	81215	119404
437	51-100	93-183	495	918	49158	41964	61696
438	51-100	93-183	168	311	16684	14242	20939
439	>100	>183	353	654	35056	29926	43997
Totals:			21308	39505	2096080	1806408	2630700

Table 1.3. Change in sampling intensity accompanying changes in survey/sampling design and conversion to RV *Lady Hammond* from RV *E.E. Prince* for the survey of the southern Gulf of St. Lawrence.

	Sampling Intensity Sampled:Unsampled
Traditional RV *E.E. Prince* Survey (1970-1982) (max. 65 sets) (stratified random)	1:17,253
'Enhanced' RV *E.E. Prince* Survey (fixed station, multistratification scheme with modified flatfish sampling protocol) (1983 - 1985) (max. 84 sets)	1:13,350
RV *Lady Hammond* Survey (fixed station, multistratification scheme with modified flatfish sampling protocol) (1985-1987) (max. 146 sets)	1:6,634
RV *Lady Hammond* Survey (stratified random with enhanced modified flatfish sampling protocol (sexed length frequencies)) (1988)(102 sets)	1:9,496
RV *Lady Hammond* Survey (stratified random with enhanced modified flatfish sampling protocol (sexed length frequencies)) (1989) (168 sets)	1:5,765

Figure 1.1. Stratification of NAFO Divisions 4T, 4V, 4W and 4X adopted in January 1970 (after Halliday and Koeller, 1981).



II. CRUISE PREPARATION

It is a general policy of the Department of Fisheries and Oceans that research and survey activities using Departmental vessels are cooperative in nature, and that they involve interlocking responsibilities on the part of vessel Masters and Chief Scientists. The vessel's Master is responsible for the safety and efficient navigation of the ship and its complement of crew and scientific staff. The Master is also responsible for the maintenance of discipline and for the well-being of all on board in terms of pertinent regulations pursuant to the Canada Shipping Act.

Except for emergency situations, the Chief Scientist is directly responsible for the scientific staff; the Master and Chief Scientist work as a team. The Chief Scientist must ensure that the scientific staff are aware of the vessel's procedures and customs regarding safety, access to the bridge and engine room, meal times, etc.

As a general rule, scientific staff have the same privileges as the vessel's officers. Although the lounges, dining salon and pantry are for the use of both the vessel's officers and scientific staff, the scientific staff should try to avoid infringing on existing vessel customs. Guidelines on the use of these facilities should be brought to the attention of the scientific staff at the beginning of each cruise.

It goes without saying that the Chief Scientist will plan the work to be carried out on the cruise at an early stage. It must be pointed out, however, that equipment breaks down on occasion; sometimes the weather is good for days on end, and there are even times when Murphy's Law seems to be in abeyance. Ships are very expensive to operate, and Chief Scientists are expected to ensure that the maximum possible output is obtained from each day allocated. The ship and scientific staff should be kept busy and utilized 24 hours a day - no matter whether things go well or disaster strikes. Every cruise should carry "excess" equipment, etc., to ensure that time is never wasted - and "excess" experiments or work should be planned for those times when equipment failure or weather prevents the planned program from being carried out. This permits the routine schedule of six hours work/six hours rest to be maintained. An exceptional run of good luck may permit the "excess" experiments to be completed and avoid an early return to port accompanied by wasted shiptime at dockside.

Preparation for a cruise should begin well in advance (one month or more) of the departure date to ensure that all equipment is available and in good working order and that all time tables and contingencies can be met. Generally, the full time attention of at least two people is required. The chief scientist or program manager oversees any necessary selection of stations, draws up the cruise program, and conducts and reviews all correspondence regarding the cruise (to be kept in a Divisional RV cruise file). One technician should be responsible for gathering together all equipment, ensuring that it is in working order, and arranging its safe delivery to the vessel.

A research permit must be obtained at least one month in advance of the survey. This permit must be signed by the Director of Science Branch and should be sent to all persons listed in Appendix IIa. A finalized cruise program should be distributed to those listed in Appendix IIb at least two weeks before cruise departure. This should include normal vessel scheduling and activities as well as detailed descriptions of non-standard work to be done. These latter activities are normally collections of either specimens or data records. Details should include the name of the individual and agency making the request, what research is planned, how the samples or data are to be collected, and if samples, how they are to be labelled and preserved. Whenever feasible, special requests should be returned to the scientist requesting the data, via the chief scientist or program manager, with a covering letter and a photocopy of the completed "Station" data sheets applicable to the samples or data collected.

A. Station Selection and Sampling Requirements

1. Pre-1983 Surveys

A computer program (on the St. Andrews HP3000) performed most of the procedures needed to obtain the final list of the stratified random stations listed in the cruise program. Stations were chosen randomly from a computer file which contained the coordinates of the centers of all minor sampling units grouped by major sampling units and strata. In order to ensure that no information has been lost from the file, a printout of the locations of all sampling units should have been made prior to selection and checked with the original. Alternatively, all coordinates can be plotted and the plot checked for missing sampling points. If any data were missing, it could be added by re-digitizing the missing

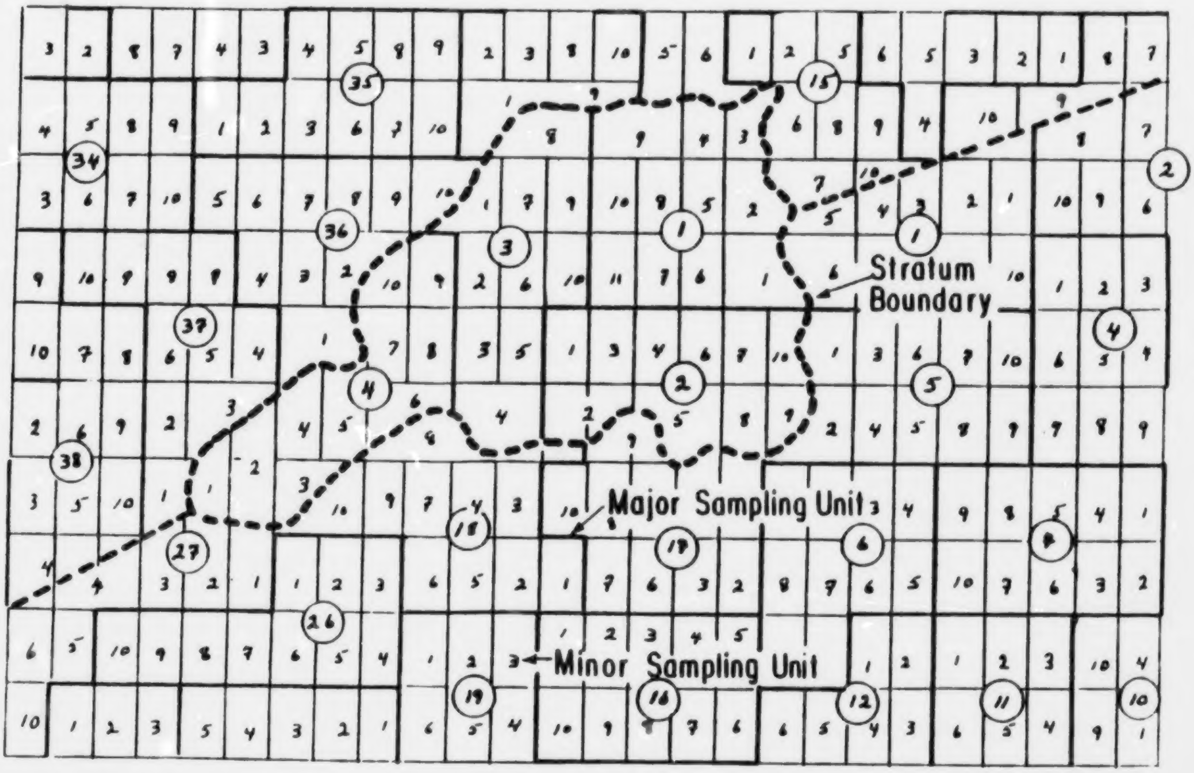


Figure 1.2. Sampling unit design used in selection of 'random' stratified stations (after Koeller, MS 1981).

Table 2.1. Sampling schedule for strata in the southern Gulf of St. Lawrence.

NAFO Div.	Stratum No.*	Depth Range (fath)	Area (nm)^2	Pre-1983 n	Pre-1983 Alt	Post-1985 Day	Post-1985 Night
4T	01	<50	344			3	0
	02	<50	452			4	4
	03	<50	113			2	0
	15	>100	764	2	1	3	3
	16	51-100	1,067	2	1	5	4
	17	<50	525	2	1	4	3
	18	<50	394	2	1	4	2
	19	<50	443	2	1	2	2
	20	<50	773	2	1	3	3
	21	<50	329	2	1	3	1
	22	<50	1,244	3	1	6	5
	23	<50	3,211	4	1	5	4
	24	<50	1,050	3	1	3	3
	25	>100	630	2	1	2	1
	26	51-100	388	2	1	2	1
	27	<50	951	2	1	2	3
	28	<50	202	2	1	2	1
	29	<50	1,696	3	1	3	3
	31	<50	1,419	3	1	2	3
	32	<50	301	2	1	2	2
	33	<50	1,188	3	1	3	5
	34	<50	1,211	3	1	3	4
	35	<50	639	2	1	2	3
	36	<50	958	2	1	3	3
	37	51-100	495	3	1	3	2
	38	51-100	168	2	2	2	1
	39	>100	353	2	1	2	1
Total Area			23,760 nm^2				

nm^2 - area in square nautical miles
Alt - alternate station
Day - stations fished during daylight hours only (eg. 0700 to 1900 hrs.)
Night - stations fished during evening hours only (eg. 1900 to 0700 hrs.)
* - also referred to as strata 401, 402, 403, etc.

sampling locations from the original master charts and updating the data file.

The initial selection printed out a preliminary set of stations for the southern Gulf of St. Lawrence cruise, or a specified number of stations in selected strata. For the annual September abundance survey the sampling intensity per stratum was incorporated into the selection program according to the schedule in Table 2.1.

Stations were chosen by first selecting a major sampling unit without replacement and then choosing one minor sampling unit within this major sampling unit. This was repeated until the required number of stations had been chosen.

After the initial selection, all stations were plotted on navigational charts having the stratum boundaries, stratum number and depth ranges clearly indicated. If an error has occurred it may then be necessary to choose additional stations in selected strata tomeet the sampling requirements. After all station locations were finalized, a printout and plot of their locations was made for the cruise program.

2. Post-1982 Surveys (1983-1987)

A multiple stratification scheme was adapted to the pre-1983 stratification (by depth) for the southern Gulf demersal fish survey starting in 1983. This involved depth strata 415 through 439 (Table 2.1) and an overlaid stratification by bottom type (surficial geology - using charts from Loring and Nota, 1973) (Appendix I. Figure AI.4). In this new scheme, stations were chosen from the randomly selected stations of the surveys in 1980, 1981, and 1982. The number of sets within a depth strata (Appendix I. Figure AI.3) were allocated to bottom type according to the area of that bottom type in the strata. The same technique was repeated for the statistical unit areas of the southern Gulf (Appendix I. Figure AI.2); no additional stations were necessary to fulfill this requirement. Six new strata were identified in the near shore strata (401 through 406) and fishing stations were allocated to 401, 402 and 403; the other three strata are identified for future consideration only. Strata 401 through 406 must be used with caution for two reasons:

1) they are new and survey biomass estimates of the entire southern Gulf incorporating them will not be comparable with earlier estimates, and

2) these same strata numbers are used by surveys in the northern Gulf of St. Lawrence referring to different areas.

This multistratification scheme used in 1983 and 1984 required approximately 50% more stations than had been surveyed prior to 1983. This increased coverage was achieved by reducing the sampling effort for flatfish and generally streamlining the 'paper' data sheets. The flatfish sampling was changed from sampling 'sexed' catches to sexing sampled catches. Prior to 1983, flatfish were sexed until at least 200 fish of each sex for each species had been found, then a random sample of 200 fish/sex was taken for length and a stratified sample for age from each sex. From 1983 to 1986, 200 randomly selected fish were measured for length and a stratified sample (1 otolith/cm) for age and sex was taken from the same 200 fish. The additional stations fished balanced the loss of otoliths from individual catches. This was in effect for 1983, 1984 and 1985 on the RV E.E. Prince.

In 1985 a comparitive fishing experiment was conducted between the RV E.E Prince and the RV Lady Hammond. All surveys subsequent to 1985 are proposed to be conducted using the RV Lady Hammond. The above flatfish sampling scheme was maintained in 1985 and 1986 on the RV Lady Hammond. In 1987, due to the expanded resources of the RV Lady Hammond, sexed length frequencies were again collected but on sampled fish - not on a 'sexed' catch.

The RV Lady Hammond is a 58 meter stern trawler capable of fishing 24 hours per day (4 x 6 hr watches); this has resulted in an added complication to the maintenance of a comparable time series. Additional stations were selected as described above - these were assigned to the night portion of the survey - effectively doubling the sampling intensity of the post-1982 RV E.E Prince survey to in excess of 150 sets and extending the comparative daylight survey time series (Table 1.3).

One important difference between the pre-1983 stratified random survey design and the post-1982 initially randomly selected but subsequently fixed station design is search time. With randomly chosen fishing sites, many stations were found to be untrawlable - often this was not discovered until after extensive gear damage (Table 2.2). In the fixed station design alternate stations are no longer assigned as all stations have been successfully towed on at least 3 different occasions. [Unfortunately gear damage reports are not available for the random stratified surveys - skippers of both the RV Lady Hammond and the RV E.E.Prince have commented on the lower rate of damage with the fixed station design.]

B. Cruise Program

A cruise program should be issued at least two weeks in advance of the departure date with copies going to all members of the scientific party, the captain of the vessel, DFO Ships Branch, all Atlantic Zone Science Branch Directors, all Gulf Region Area Offices and other interested persons (see mailing list Appendix IIb). Any changes in schedules between the time the program is issued and the time of departure must be communicated promptly, in writing if possible, to everyone concerned. The final cruise program - corrected as necessary should be attached as Appendix 'A' to the cruise report.

The cruise program should contain the following information:

1. Exact departure date, time, and place.
2. Approximate termination date, time and place.

Table 2.2. Example of gear damage sustained on two surveys using the 24 hour RV Lady Hammond (Western IIA Trawl) - fixed station, multistratification scheme.

Year	1985	1986
Complete net	2	-
Top bridles	11	4
Bottom bridles	10	9
Pennets	7	8
Bellies	7	8
Flywings	3	3
Buntwings	2	4
Middlewings	3	2
Footrope	-	1
Extensions	-	2
Liners	-	2
Codend	-	1
Door leg	-	1
Number of stations fished	145	146

3a. Dates and places where the vessel is likely to be in port.
3b. Phone numbers of Ships Branch - Halifax and call sign of the research vessel for radio communication.
4. Area of operation.
5. Members of the scientific party indicating Chief Scientist, leaders of watches, hydrographer, etc. and contact person at head office. Regional or other affiliation should be indicated for scientific staff from institutions other than the GFC.
6. Objectives of the cruise (brief description).
7. Fishing methods and gear to be used.
8. List of the fishing stations under their corresponding strata including: latitude, longitude, depth, statistical unit area, and bottom type.
9. A small-scale map indicating locations of fishing, full hydrographic and BT stations.
10. Detailed sampling requirements expected from scientific and hydrographic staff and bridge personnel.
11. Special studies or collections to be made including instructions on sampling, preservation, labelling and delivery of specimens after the cruise.

The name of the individual making the request, their affiliation/institution, and their address and phone number should be listed.

C. Check-list of Cruise Supplies

One person (eg. the RV inventory coordinator), should oversee the acquisition of all equipment and supplies. A list of supplies, both essential and optional is given in Table 2.3. These articles should be listed and ticked off on a standard "Cruise Supplies Checklist" form indicating the amount of each article required and what is available. A check should be made at the time of packing/shipping and once again on the vessel prior to departure. A final check is made again upon return to headquarters indicating the amount returned and thus what needs to be reordered. This reordering should be carried out early in the new year so that purchases can be made on current year funds and the purchase of extraordinary items can be planned in the following years budget.

Table 2.3. Standard cruise supplies required for a demersal fish inventory survey.

1. Instrumentation

Scales-large spring-type (capacity 90 kg)
Scales-spring type (capacities: 0-50,0-100,0-250,0-500, 0-1000,0-2500,0-5000 and 0-12000 gr)
Check weights: 100, 500 and 25000 gm (can be jugs or containers that hold a known mass of water)
XBT launcher, recorder, probes and manual or
MBT (0-60, 0-140 and 0-275 m), slides and manual
NXBT (MS-DOS compatible depth recorder)
Thermometer for surface temperatures
(Bucket for surface water temperature if the vessel does not have one)
Knives
Forceps
Scissors
Measuring boards

2. Data Sheets and other paper supplies

Cruise charts

"Station" data sheets
"Deck" data sheets
"Length Frequency" data sheets
"Fish" ("Biological") data sheets
"Catch" data sheets
MEDS Bathythermograph Data Summary
MEDS Bridge Log
MEDS Deck Sheet
MEDS Data Summary

Blank note book
Scratch pads
Shipping tags and twine
Specimen labels
File folders

Otolith vial labels (indexed and labeled)
Otolith envelopes (blank and pre-stamped - labelled)
Otolith boxes

"Kimwipes"
Roll towels

Fish boxes & master cartons

Taxonomic guides (keys), code manuals, etc.

The use of brand names should not be construed as an endorsement as either the editors or the DFO.

Table 2.3.con't
Standard cruise supplies required for a demersal fish inventory survey.

3. Plastic and rubber supplies

Wet gear (protective clothing depending on the season)
Rubber sleeves and gloves (plastic and cotton gloves)

Polyethylene wash bottles
Pails 2 & 5 gal
Polyethylene bags ("8 lb." type)
Garbage bags (for large frozen specimens)

4. Chemicals

Formalin (mixed from concentrated (37%) formaldehyde - prevent exposure of formalin or formaldehyde to freezing conditions)
Glycerine
Thymol
Isopropol alcohol
Methanol

5. Miscellaneous

Clip board (double and single)
Paper clips #2
Rubber bands
Stapler & staples
Pens & pencils
Felt-tip marking pens
"Scotch" & masking tape

Otolith vials (1 dram)

Liquid Detergent
Scrub brushes
"WD40" lubricant
Sharpening steel and carborundum stone
Twine and rope

"Gravol"

D. Going Aboard the Vessel

A number of preparations are required immediately prior to departure and while steaming to the first station.

1. Checking the Specifications of the Survey Trawl and Notes on Procedures to Evaluate and Record Gear Damage

In order to have survey results comparable from survey to survey and year to year, the trawl must be exactly the same every time it is fished and it must be fished under the same conditions each time. If the specifications are not checked before every cruise, it is possible that changes made out of necessity during the course of non-survey fishing may become "permanent". Such changes may be unacceptable and it is mandatory that the chief scientist or their designate confirm that the trawl meets the original specifications outlined either in Carrothers (1989) (Figures 2.1 and 2.2) or the manufactures specifications (Figure 2.3). In the case of large trawls where scientific staff cannot verify a trawls' specifications, the chief scientist must verify with the captain or fishing master that the survey specifications are met by the trawl..

The net must be checked after every set for tears. It is often a difficult decision on whether or not to accept a tow as valid after net damage has occurred. There is no hard data on the effect of different types and sizes of tears on gear effectiveness; thus precise guidelines on the amount of damage that is acceptable cannot be provided. Studies with underwater cameras suggest that the location of a tear is important. In general, the effect may be ranked in the following order of increasing importance:

1. lower wings - negligible effect
2. upper wings - less effect near tips than in bunts
3. square - effect may vary considerably with species
4. fore bellies - lower probably less serious than upper
5. aft bellies
6. codend

It is necessary to report any damage in terms of the number of meshes torn as well as where the tear (or tears) occurred. The information should be entered in the "remarks" section on the front of the station and set sheet and a general note made on the deck sheet. The safest approach is to repeat doubtful tows, or do an alternate station, time permitting.

2. Checking Supplies and Preparing for Work

To prevent a rush and panic at the first station, materials and equipment needed for sampling should be readied before this time. Before the vessel disembarks it is essential that all the equipment brought aboard be secured to prevent damage or personal injury caused by motion of the vessel. The list of cruise supplies should be checked to verify that everything is aboard. Data sheets can be unpacked and placed in dispensing shelves or cruise boxes. Otolith envelopes and vials should be labelled and the glycerin solution prepared. All weighing scales should be tested with check weights including the basket scale (ensuring it is tared with a wet basket and the "stick"). Hydrographic data sheets, salinity bottles, MBT or XBT equipment, etc. should be unpacked and readied in the hydrolab as required (salinity has not been routinely sampled on southern Gulf RV cuises since 1982); thermometers, sampling bottles and BT equipment should be inspected for damage that might cause malfunction at sea. Remember that MBT's should not be exposed to temperatures below 0^{o} C. The hydrographic technician(s) and winch operators should be reminded to use the appropriate range MBT or XBT probe for the current station depth (also, remember not to lower an MBT beyond its maximum depth range).

3. Pre-Cruise Briefing

The vessel captain and mates, as well as all scientific personnel should be present at this meeting. Since our cruises involve people from various government and non-government institutions, this is generally not possible until shortly before departure. At this time, any last minute changes in the cruise track, time schedules and sampling requirements should be explained. New ship's officers should be shown how to complete the "Station" data sheet and the use of codes on this card (eg. code 3 for "Yankee #36" otter trawl) and the MEDS weather codes, etc. They should also be briefed on the sampling requirements outlined under "Survey Procedures - Bridge Personnel" (Chapter III this manual). Fish sampling requirements should be reviewed, particularly those concerning special observations and collections not done routinely.

During this meeting, the captain should be consulted regarding the potential for conflict with commercial fishing operations conducted in the same area of the survey (ie. fixed fishing gear).This may permit modification of the intended cruise track to obviate any potential conflicts.

Figure 2.1 Atlantic Western IIA Groundfish Survey Trawl - Netting and frame lines (after Carrothers (1989) page 22).

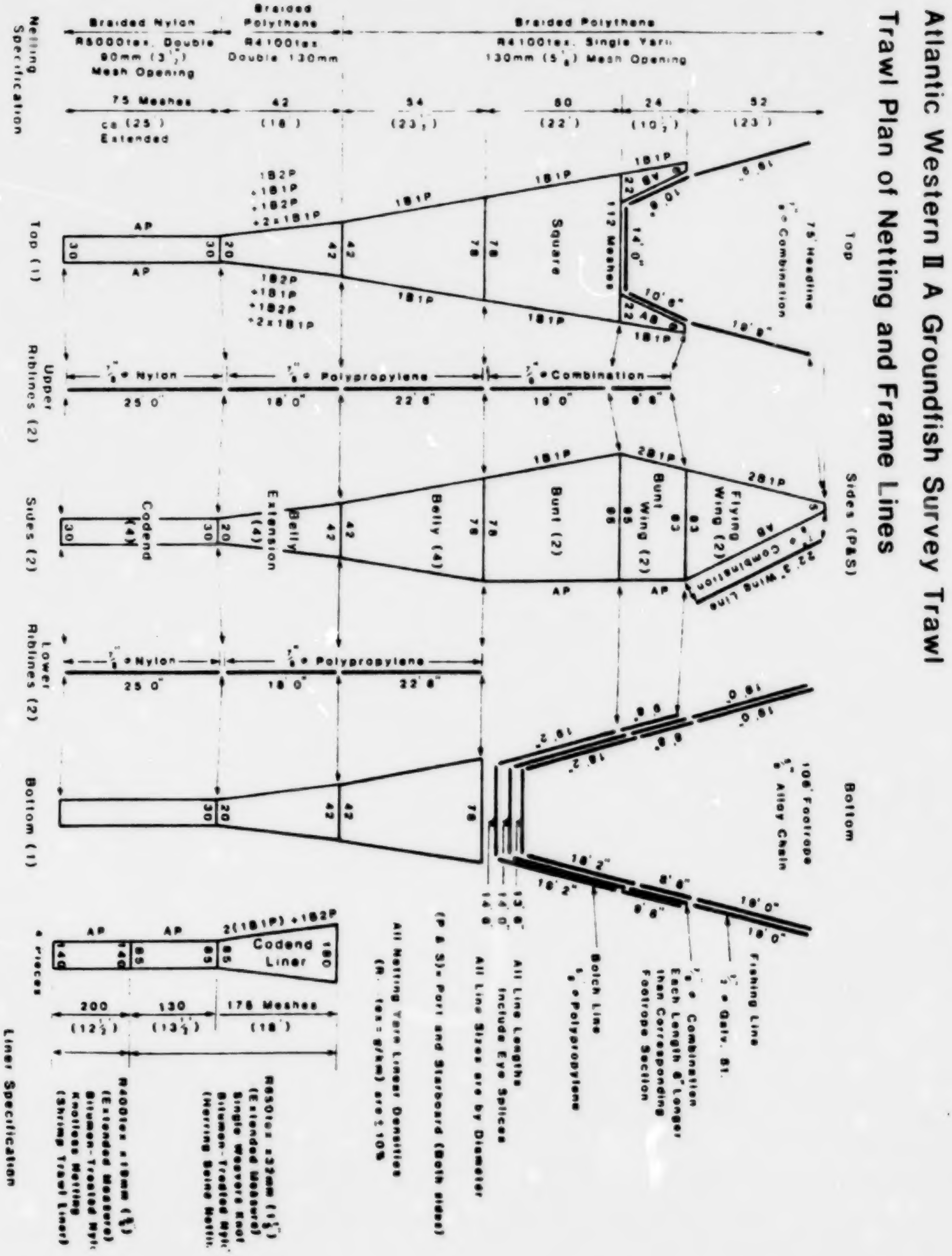


Figure 2.2 "Yankee" #36 Survey Trawl - Netting and frame lines (after Carrothers (1989) page 11).

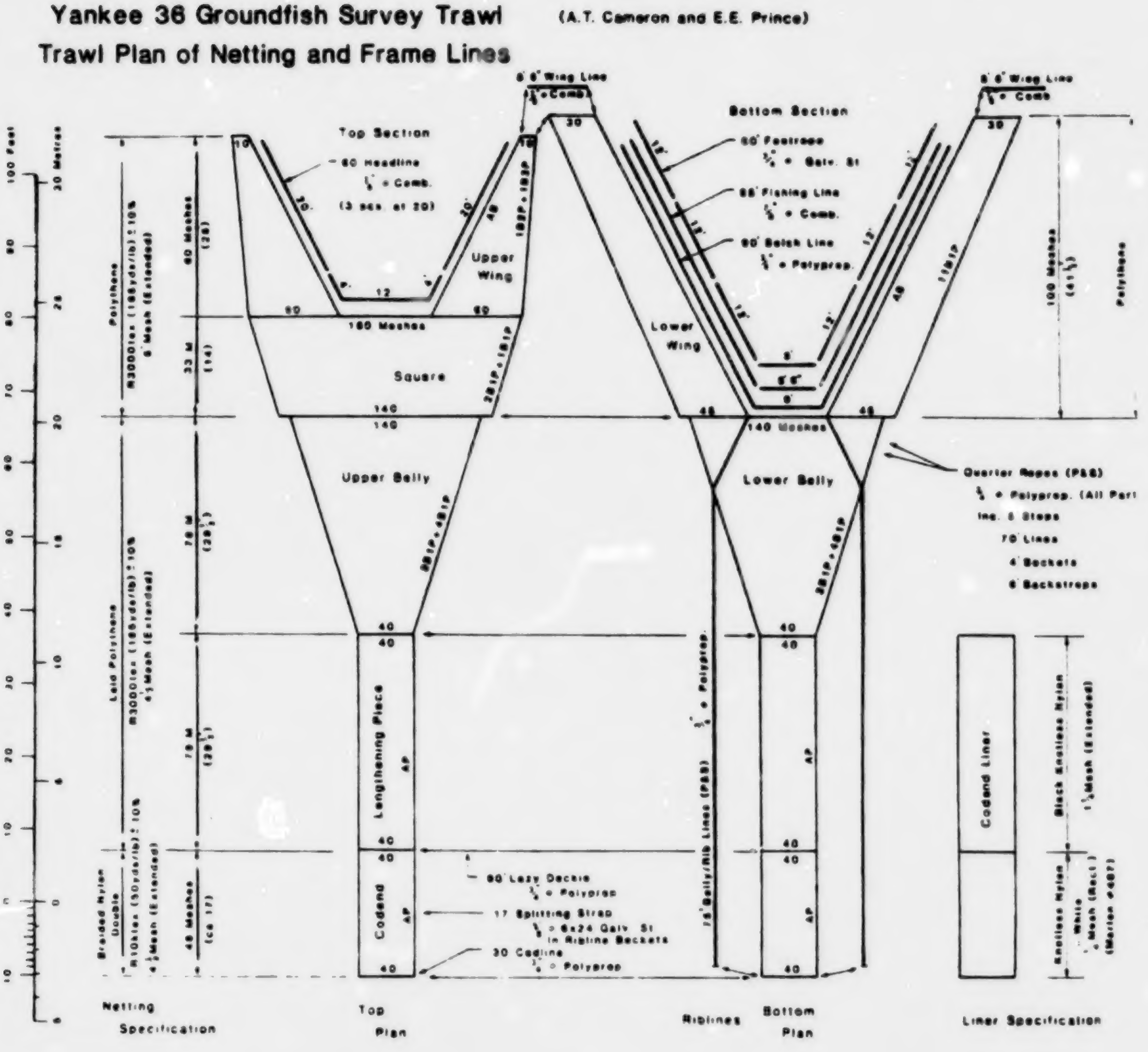
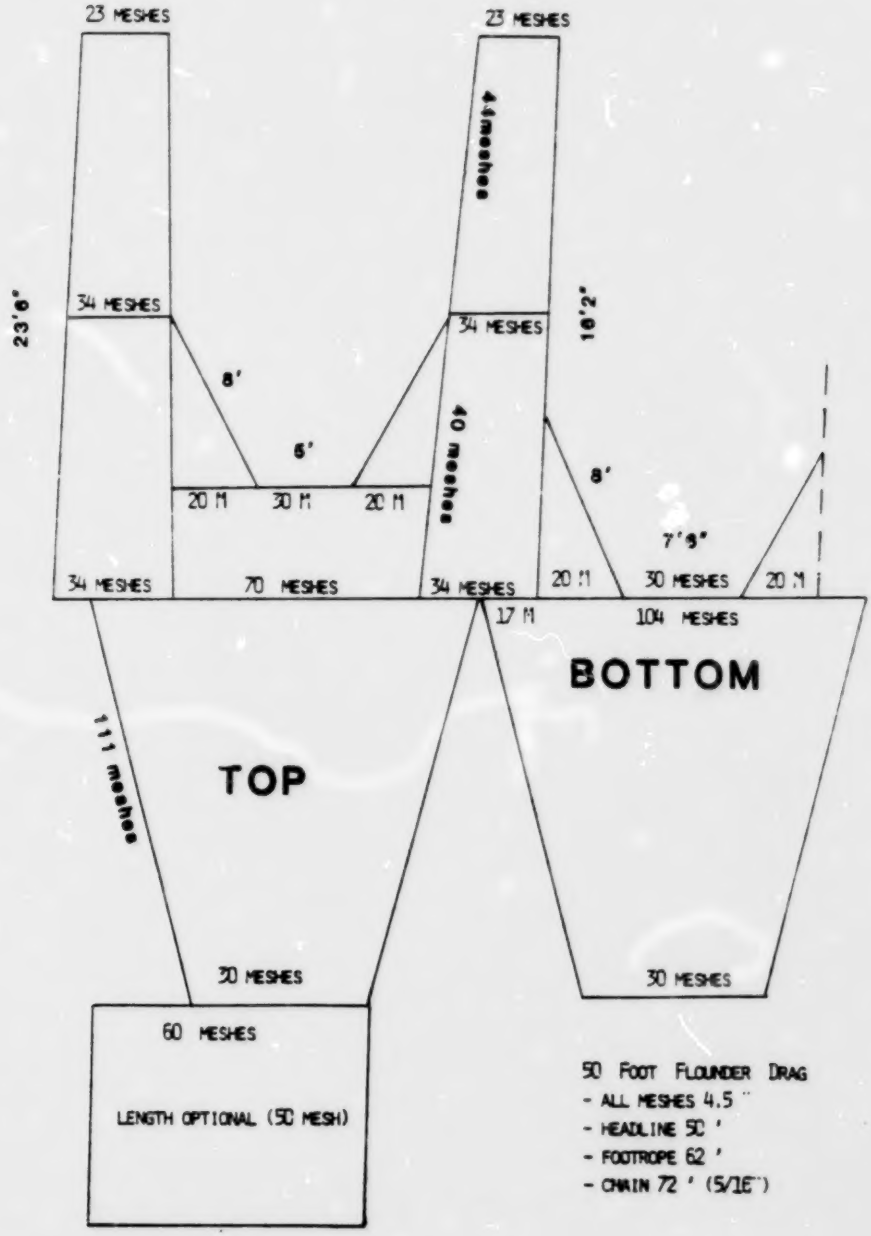


Figure 2.3 " 50' Flounder Trawl" - Netting and frame lines (redrawn from a figure provided coutesy of FORSEA Ltd., Moncton, N.B.). The trawl net was fished with 6' aluminium doors and 85' bridles.



III. SURVEY PROCEDURES

A. Bridge Personnel

The Chief Scientist of the cruise is responsible for supplying bridge personnel with a set of charts on which the pre-selected trawl and hydrographic stations are plotted. The type of sampling required at each station should be clearly marked or supplied on supplemental sheet(s) with the cruise program. Stratum boundaries and depth zones should also be indicated. Since historic stratification was based mainly on depth, it is essential that each trawl set be made within the appropriate stratum and thus within the appropriate depth zone. The fixed station, multistratification scheme used from 1984 to 1987 included depth, bottom type and statistical 'unit area'. If, on reaching the position indicated in the cruise program, any of the stratification parameters are not as expected, the Chief Scientist should be called to verify the position of the set and if necessary, to move the set to a suitable location (the location should be double checked to ensure that an error in plotting has not occurred). The direction of the tow should be toward the next station unless there is good reason for choosing an alternate direction (eg. an obstruction, or if the tow would cross a stratum boundary, or change depth). As many charts (ie. surficial geology) may not be exact - every attempt should be made to remain at least one nautical mile from a stratum or bottom type boundary.

Prior to 1983 a different series of numbers were given to each of the sets of data collected on a cruise. That is, trawl sets were numbered consecutively throughout the cruise from 1 upward, hydrographic stations were numbered independently from 1 upward, as were plankton sets. The numbers allocated were marked on the charts at the positions of these sets. From 1984 to 1987 a single unique number was given to each location and point in time. That is, a set on a cruise is given a unique number (though not necessarily in sequence); -any hydrographic or other collections taken at that location and time also use that number (even if a BT cast is only made at every other station the BT will still have the station's number). The track of the vessel during towing should be marked on the chart by bridge personel. Any notes on reasons for moving a station (ie. the location, type, and date of observed commercial fishing operations that may affect the survey, or other points of interest) should be recorded on the chart and in the space provided for remarks on the "Station" data sheet. These data are useful in writing reports and interpreting results, especially during editing.

A sounder trace of the bottom covered during each trawl or plankton gear set should be kept and given to the Chief Scientist, along with the charts, at the completion of the cruise. These sounder traces should be recorded with the sounder configured to mark depth divisions on the paper. The date, start and end time of the tow, cruise and tow number should be marked on the sounder records. As some sounder traces discolour or yellow with age, they should be photocopied upon return to the lab. Each trace should be stapled to the "Deck" data sheet for storage.

The practice of randomly pre-selecting stations (prior to 1983) frequently resulted in stations being placed in positions where a subsequent echo sounder survey showed the bottom to be unfishable. If the officer-in-charge of a watch decides that a station is unfishable, he should, in consultation with the Chief Scientist, search for a new location. This search should be conducted in the general direction of the next station but staying within the same stratum (and thus depth zone) as the abandoned station. If, on fishing a station, severe net damage results, the station should be repeated at the closest possible suitable location, staying within the same stratum. Another option, especially if suitable bottom is not found, would be to choose the closest alternate station in the strata and indicated on the master chart. This decision must be made in collaboration with the Chief Scientist.

A standard tow for large vessel offshore surveys is 30 minutes at 3.5 knots, timed from all warp out to the beginning of haulback. A standard tow for inshore small vessel surveys is 30 minutes at 2.5 knots, timed from all warp out to the beginning of haul back. Tows that are cut short for reasons other than net damage (eg. approaching rough bottom) should be rejected as a survey set if they are shorter than 20 minutes; however, in any case total weights of each species should be recorded. Any such rejected sets should be used for any 'special' collections that are 'population parameter independent' (ie. they do not have to come from standard sets (eg. a liver sample, otoliths from a rare species, etc.)).

The speed of the tow can be verified by manual computation, knowing the distance travelled and duration of the set. Since 1983, the distance towed has been determined by Loran C and speed of the tow by Loran C or Doppler log.

If the distance towed was not recorded or was not available it can be estimated using the Pythagorean

Theorem with the following assumptions:
1) 1 nautical mile equals 1 minute of latitude (Maloney, 1980) and
2) in the southern Gulf of St. Lawrence the ratio of Latitude : Longitude is 1 : 1.478.

Based on these assumptions, the distance towed during a fishing set between the two points:

	starting point	ending point
Latitude	46’ 00.42"	45’ 59.94"
Longitude	63’ 54.70"	63’ 53.24"

can be calculated by subtracting the end latitude and longitude from their respective starting values.

46’ 00.42"	63’ 54.70"
-45’ 59.94"	-63’ 53.24"
0.48"	1.46"

Note there are 60 minutes in a degree, thus when carrying a degree to the minutes column it is 60 that is carried not 100, thus the difference of the latitudes is 0.48" not 40.48". The next step is to convert the longitude value to the equivalent latitude (1.46 / 1.478 = 0.988" latitude). Then sum the squares of the two values ($(0.988)^2 + (0.48)^2 = 1.206$) and take the square root of the value (1.206) which in our example is 1.098 nautical miles. As the "Station" data sheet has only space for two digits the value would be entered as '1.1'.

On each occasion that the net is set, or a hydrographic station is occupied, a "Station" data sheet must be filled out, even if the set resulted in net damage and caught few or no fish. The set number allocated for a tow should remain with that tow even if the tow was invalid because of damage. All the data required to be recorded on the bridge should be filled in before the sheet leaves the bridge (see Appendix 4.1 Figure 4.2 and Appendix 4.2 Figure 4.2) as an example). [Note: most of the codes used on this sheet are listed on the reverse of the "Deck" data sheet.] Any data not known should be left blank. **Do not guess.** The data corresponding to any data fields for which the code is not known should be written in the blank space adjacent to the field. The data fields on the "Station" data sheet are discussed below:

1. Recording Personnel: Initials of bridge personnel and scientific staff filling out the sheet.
2. Cruise: Cruise number (eg. P296) (**Single letter abbreviation for research vessel and sequential 3 digit cruise number for that vessel**). The codes used in the southern Gulf surveys to date, include:
   A - A.T. Cameron
   P - E.E. Prince
   N - Alfred Needler
   N - Navicula
   H - Lady Hammond
   J - J.L. Hart
3. Stn. or Stratum: Stratum number from charts or cruise program. If not available, leave blank (see Appendix I for a map of the strata within the southern Gulf of St. Lawrence).
4. Set: Unique set number from cruise program or chart.
5. Date: Day, Month, Year (of beginning of set).
6. Unit area: From cruise program (**These are not to be confused with Stratum or STACAC codes used for commercial landing data.**)

UNIT AREAS

DFO Statistical Unit Area	RV Numeric Code	DFO Statistical Unit Area	RV Numeric Code	DFO Statistical Unit Area	RV Numeric Code
3Ps	360	4Su	420	4Tu	430
3Pn	370	4S	420	4Tf	431
		4Si		4Tg	432
4Ru	410	4Sr	421	4Th	433
4Ra	411	4Ss	422	4Tj	434
4Rb	412	4St	423	4Tk	435
4Rc	413	4Sv	424	4Tl	436
4Rd	414	4Sw	425	4Tm	437
		4Sx		4Tn	438
		4Sy		4To	439
		4Sz			

7. Type of experiment: Survey tow, comparative fishing, etc. (see reverse of "Deck" data sheet Appendix 4.2 Figure 4.1).
8. Time Beginning: Time at "blocking-up" (noted to the nearest minute). (Note: Prior to 1983 there was no field for Time End, instead, Duration of the tow was recorded to the nearest minute).
9. Time Ending: Time at "knocking-out" (noted to nearest minute).
10. Gear: Gear and size code value (eg. Yankee #36 is code 3)(see reverse of "Deck" data sheet).
11. Auxiliary Equipment:
    (a) For otter trawls, record whether the following were used: liner, rollers, or other extras (see reverse of "Deck" data sheet).
    (b) For plankton gear, record whether the tow was made vertically, horizontally or stepped oblique.

12. Ship Speed: Recorded in nautical miles per hour (knots) to nearest 1/10th. Should be read from Doppler log or Loran C unit.
13. How Obtained: Device used (eg. Doppler log, radar buoy, decca plots, Loran C, etc.(see reverse of "Deck" data sheet)).
14. Latitude and Longitude: Recorded at start and end of the tow to the nearest hundredth of a minute. Bridge personnel should write this value on the line next to the boxes. Scientific staff will 'round up' the value to the nearest minute. The Loran C or Decca reading should be recorded in the space provided.
15. Depth Start: Depth to the nearest meter at beginning of set (Note: Prior to 1983 there was no field for Depth End, instead Range of depths was recorded to the nearest meter).
16. Depth End: Depth to the nearest meter at end of set.
17. Water Temperature - Surface: Temperature of the surface water, usually obtained with a bucket thermometer and recorded to the nearest 1/10 th of a degree centigrade.
18. Water Temperature - Bottom: Temperature of the bottom water, or temperature at the fishing gear. This temperature is usually obtained from a bathythermograph (MBT, XBT, or NXBT) cast and recorded to the nearest 1/10 th of a degree centigrade. It is filled in after the cruise (when the MBT slides are read or the XBT data are interpreted).
19. Salinity - Bottom: Salinity of the bottom water or at the fishing gear, recorded in parts-per-thousand. Salinity samples have not been collected on demersal fish surveys of the southern Gulf since 1983.
20. Bottom Type: Major sediments covering the bottom (from the surficial geology charts of the Gulf of St. Lawrence (Loring and Nota, 1973) (see reverse of the "Deck" data sheet)).
21. Light (Secchi): This field has never been used in demersal fish surveys of the southern Gulf of St. Lawrence. If secchi disc measurements were made they should be recorded to the nearest meter.
22. Log Reading: Recorded at beginning and end of the set to the nearest 1/100th of a nautical mile. Always include the decimal point (eg. 1061.93).
23. Distance Towed or Water Strained: Recorded to the nearest 1/10th of a nautical mile. Prior to 1983 this distance was calculated from start and end positions or from the log; since 1984, distance or water strained has been obtained directly from the Loran C navigational unit. In situations where the distance towed is not available from the Loran C unit at sea, this field should be left blank and completed upon return to headquarters (by plotting or calculation - see pages 3 - 1 to 3 - 2).
24. How Obtained: Device used (eg. Decca, Loran, etc.) (see reverse of "Deck" data sheet).
25. Ship Direction: In degrees.
26. Barometer: Record to the nearest millibar.
27. Air Temperature: Record to the nearest 1/10th of a degree centigrade.
28. Weather: Record using weather state codes (see "MEDS Data Summary Tables" Appendix 5.1).
29. Clouds: Record using cloud codes (see "MEDS Data Summary Tables" Appendix 5.1).
30. Sea: Record using wave height codes (see "MEDS Data Summary Tables" Appendix 5.1).
31. Swell: Record using swell condition codes (see "MEDS Data Summary Tables" Appendix 5.1).
32. Wind Direction: Direction from which the wind comes, recorded in degrees (see reverse of "DECK" data sheet).
33. Wind Force: Record using Beaufort wind scale (see reverse of "DECK" data sheet).
34. Tide and Current in relation to ship's direction: Recorded as tide or current direction in relation to parts of vessel (eg. bow, starboard, stern, etc. (see reverse of "DECK" data sheet).

IT IS ESSENTIAL THAT THIS SHEET BE HANDED OVER TO SCIENTIFIC PERSONNEL IMMEDIATELY ON COMPLETION OF SET (Generally to the scientist doing the hydrography.)

B. Fish Sampling

The number of observations made during each set requires that a watch be well organized, in order to keep errors to a minimum. Thus, within a watch, one person should be responsible for hydrography, one for observing the haulback of the net on the deck and checking for gear damage, one for initial recording on the deck sheet and subsampling and one for coordinating fish sampling and data management. The latter in most cases will be the person in charge of the watch.

Figures 3.1 and 3.2 are flow charts of the sequence of events and data sheets used during groundfish survey operations. Each of the individual operations are discussed in detail on the following page.

1. Supervising Haulback

Because the Watch Leader and the team member responsible for hydrography will be occupied either the Chief Scientist or another member of thewatch should be made responsible for supervising haulback and sorting operations. They should be present beside the "pen" or deck hatch when the cod-end is released making notes on net damage, species composition and any peculiarities of the catch on the "Deck" data sheet. They must assure that all fish (including halibut) and invertebrates (including lobsters) find their way to the wet lab. Any fish caught in the mesh of the net should be removed and sent to the wet lab. Each species must be listed on the "Deck" data sheet in the column headed "Species" as the supervisor observes them in the pen or on the sorting table.

2. Sorting

After reaching the holding pen, the fish are sorted by species into baskets. To prevent biased subsampling, all fish of a species from a given section of the holding pen should be placed in baskets. This reduces any tendency to pick out all the large or small individuals first. Any biases still present despite this precaution should be removed by thorough mixing. After the fish have been placed in baskets, the leader of the watch must make sure that the "trash" remaining is searched for any small or unusual specimens and that these are properly processed: -the "trash" should then be sorted into major species and the remaining mixed trash (eg. brittle stars, urchins, sand dollars, etc.) should be weighed as a lot and a weight allocated to each species group by an "eye" approximation.

3. Mixing and Subsampling

Subsampling catches will undoubtedly be necessary at times. It is imperative that this be done properly. **Unless our subsamples are consistently representative of the total catch, our efforts are worse than useless!** It will seldom occur that we have more baskets of a species than we can reasonably weigh. However, it is not unusual that we catch more of a species than we can reasonably measure (eg. 6 baskets of small redfish, 3 baskets of small plaice). Some mixing and random selection procedures should then be employed. When the number of baskets involved is 10 or less, the contents of these baskets should be mixed into an equal number of other baskets (the process is called a "Dutch Shuffle") and the process is repeated a second time (Figure 3.3). For example, if a one basket sample is required from a 3 basket catch of small plaice, three empty baskets are lined up beside the three full ones. The first full basket is divided equally into the three empty ones (eg. one third in each). The same is done to the second and third full baskets. The entire process is then repeated and one of the resulting baskets chosen using a random number table (Table 3.1). Should only a half basket sample be required, 6 empty baskets should be used to divide the 3 basket catch, and so on. When the species catch is greater than 10 baskets, it is impractical to mix in this manner. In this case, the baskets should be lined up and 10 selected using a table of random numbers. These 10 can then be mixed and subsampled as before using the "Dutch Shuffle".

It is very important that the weight of the subsample be marked and circled at the appropriate location on the "Deck" data sheet when a subsample is required. No fish should be disposed of until the sampling is completed and the length frequency satisfactorily recorded.

Although variations of these techniques are applicable in certain circumstances (eg. time lost, extra large catches, etc.), the basic methods outlined above should be adhered to and changed **only** in consultation with the Chief Scientist.

Note on Sampling Unusual Individuals in a Large Catch

After 1983, the following methodology was introduced to handle 'unusual' fish seperately from the main catch. When the catch of a particular species consists of a small number of very large or very small fish mixed in with a majority of intermediate sized fish, the small number of larger or smaller fish should be handled separately. Consider the situation where 15 baskets of cod were caught in one set and of this, 6 cod were over 110 cm and the rest were between 10 cm and 90 cm. These large fish may be too 'valuable' -in terms of maturity, otoliths, weight, etc. to risk losing in the random sampling process. If the Chief Scientist or Watch Leader decides these fish should be sampled seperately, then they should be removed from the rest of the catch of that species and the main portion of the catch is processed as described above. The 'unusual' fish are then sampled entirely (eg. 100% ratio). The total number of baskets and total weight (of both the special sample and the main portion) will be recorded on the "Catch" data sheet, however, the total weight and sample weight recorded on the "Length" data sheet (to provide the sampling ratio) will be different, reflecting each of the two samples. The large fish (special sample) will have a 100% ratio while the main portion of the fish (subsampled portion) will have a ratio representing the

Table 3.1 Table of random numbers (after Freund (1967)).

Table VIII

RANDOM NUMBERS*

04433	80674	24520	18222	10610	05794	37515
60298	47829	72648	37414	75755	04717	29899
67884	59651	67533	68123	17730	95862	08034
89512	32155	51906	61662	64130	16688	37275
32653	01895	12306	88535	36553	23757	34209
95913	15405	13772	76638	48423	25018	99041
55864	21694	13122	44115	01601	50541	00147
35334	49810	91601	40617	72876	33967	73830
57729	32196	76487	11622	96297	24160	09903
86648	13697	63677	70119	94739	25875	38829
30574	47609	07967	32422	76791	39725	53711
81307	43694	83350	79974	45929	85113	72268
02410	54305	79007	54939	21410	86980	91772
18969	75274	52233	62319	08598	09066	95288
87863	82384	66860	62297	80198	19347	73234
68397	71708	15438	62311	72844	60203	46412
28529	54447	58729	10854	99058	18260	38765
44285	06372	15867	70418	57012	72122	36634
86299	83430	[illegible]	20309	57040	29285	67870
84842	65008	90894	61655	15001	94055	36308
56970	83609	52098	04184	54967	72938	56834
83123	71257	[illegible]	[illegible]	66130	72936	69848
[illegible]	32423	[illegible]	26141	65779	66388	75242
47019	76273	[illegible]	29098	54353	25971	69573
[illegible]	32302	[illegible]	[illegible]	84580	37539	28504
09921	08141	79227	05748	51276	57143	31926
36458	96045	30424	98420	72925	40729	22337
95752	59445	30847	87729	81679	59126	59437
26768	47323	58454	56058	20373	76746	49878
42613	37056	43036	58085	06766	60227	96414
95457	30566	65482	25306	02678	54392	63607
95276	17894	63364	95038	39750	64379	46059
66954	32324	64776	92843	95110	59448	77249
17457	18481	14113	62462	02798	54977	48349
03704	36872	83214	59337	01695	60666	97410
21538	86497	33210	60337	27978	70661	08250
57178	67619	98310	70348	11317	71623	55310
31048	97338	94953	35866	96283	46620	52087
69799	53380	16498	80723	96422	58078	99643
90595	61867	59231	17772	67831	33317	00520
33570	04981	98629	75784	09977	29398	93806
15340	93460	57477	13808	48431	72936	78160
64079	42483	36512	56186	99098	48850	72827
63491	05346	67118	62963	74958	20946	28147
92063	63868	41034	28260	79708	00770	58643
52300	40638	66311	04172	73083	11795	22794
74022	12142	[illegible]	65035	21828	39529	18988
04177	50079	61848	64015	70836	82557	37325
86063	60070	60241	32836	27373	11479	94114
41268	80187	20331	09636	84668	42486	71303

* Based on parts of *Table of 105,000 Random Decimal Digits*, Interstate Commerce Commission, Bureau of Transport Economics and Statistics, Washington, D.C.

weight sampled over the total weight of those regular fish. The total number of fish caught will be the sum of total numbers as calculated independently from each of the two samples (large fish plus regular fish expanded by the sampling ratio).

Note on the Size of Subsamples

Unrepresentative length frequency distributions will result in unrepresentative population estimates. **Subsampling is to be avoided unless absolutely necessary and the chief scientist should be consulted when in doubt.** It is essential that the subsample taken from a large catch give a length frequency distribution that is representative of the entire catch (eg. enough fish should be measured so that additional measurements would make only slight changes in the length frequency distribution pattern). Judging the size of an adequate subsample in baskets is largely a matter of experience, since it will vary with the size of individuals in the catch. When in doubt, keep extra baskets aside. They can always be discarded later. **A general rule of thumb is that at least 200 fish of any species (or sex, if length frequencies are recorded by sex) should be measured from each length frequency.**

4. Weighing Techniques and Maintenance of Scales

Immediately after sorting and any mixing or subsampling (if required) the baskets of fish should be weighed. The watch leader should confirm that all species (including invertebrates and trash) have been weighed before detailed sampling begins.

Up to this point, only the "Deck" data sheet is required.

One of the most serious sources of error is in weighing techniques; **-it is imperative that all of the scales be kept clean and a tare check done regularly.** At a fixed time each day, possibly at noon, the following checks should be made:

1) The basket scale should have several of the baskets currently being used, hung on it to check the zero adjustment (taring). If wicker baskets are used, their weight can change from about 4 kg when dry to 6 kg when wet.
2) Several combinations of test weights should then be suspended on it to check recording accuracy.
3) Hand scales should be washed, oiled and tested using combinations of test weights.

Note that all weight records should be in grams and kilograms. Some of the spring scales currently in use have scales that are labeled in both metric and imperial units - it is imperative that the two scales not be confused (to avoid such confusion the imperial scales could be "masked" over with tape).

5. Detailed Biological Sampling

After weighing and subsampling, a number of detailed observations are made on individual specimens. The cruise program contains the observations required for each species. A flow chart of the events occurring during typical detailed sampling operations is shown in Figure 3.4. The actual procedures are described below.

If possible, all fish should have detailed sampling carried out on them, especially for species for which the total number of individuals is unlikely to reach more than 1,000 animals during the entire survey (eg. white hake, pollock, haddock, witch, etc. for the southern Gulf survey).

Commonly, it is impractical to make detailed biological observations on all individuals making up a length frequency sample. A stratified sample consists of an equal number of fish from each of the prescribed length intervals (eg. two fish per centimeter, one fish per half centermeter, etc). Virtually always, it is best to take a stratified subsample when subsampling is necessary. In fact, for otolith collections, it is best to take stratified subsamples from all but the smallest samples thus spreading age observations over the entire length range and over the widest geographical area. However, otoliths should, in addition, be taken from all large fish and all very small fish using the sampling technique described in section 3 above (page 3 - 4).

The order of recording information and the actual sampling sequence should be exactly as shown in Figure 3.4. The detailed sampling should be done at the same time as the length frequency is being done. The practice of doing a length frequency first and separating fish for a stratified detailed sample which is done separately is not consistent with the requirements. This practice can lead to discrepancies between "Fish" ("Biological") data sheets and "Length" data sheets because if fish are measured twice the second measurement may differ from the first. Similar discrepancies may arise when fish are recorded on the "Fish" ("Biological") data sheet but not on the "Length" data sheet. **This happens most frequently when the recorder marks the length on the "Fish" ("Biological") data sheet first.** In the course of recording the other observations for a fish (eg. weight, sex, maturity, etc.) the recorder may go to another fish without tallying the fish on the "Length" data sheet. The best way to ensure that all fish are tallied on the length frequency is to put the tally mark on the "Length" data sheet first, then record the length, weight, sex, etc., on the "Fish" ("Biological") data sheet, and during paperwork sessions, check to see that there are no discrepancies.

a. Length and Weight Measurements

Length frequencies are required for all species in every catch. Generally, fish are measured as fork length for all species with forked tails, total length for those species without them, and mantle length for squid. Herring, siver hake and dogfish are the only exceptions, they are measured total length despite having forked tails.

Prior to 1986, measurements were always recorded initially to the nearest centimeter on the "Length Frequency Tally" data sheet. After sampling was completed the data were transferred to the "Length Frequency Transfer" data sheet. Some species (eg. cod, haddock, thorny skate, white hake, etc.) were summarized to intervals of 2 or 3 cm on the "Length Frequency Transfer" data sheet. Since 1986, all length frequency data are collected on the "Length" data sheet. All fish are measured and recorded to the nearest centimeter or half centimeter.

Due to sexual dimorphism in growth, length frequencies by sex were required for all flatfish, silver hake, white hake, redfish, dogfish, and skates. In 1983, in order to reduce the time required to complete a sexed length frequency of flatfish, the technique was changed.

Prior to 1983, flatfish were sexed until at least 200 fish per sex had been identified, then routine sampling was conducted on each sexed sample. The number of fish required for such a sample was 400 or more fish per species (200 per sex) and 1 otolith (detailed samples) was taken per centimeter per sex. From 1983 to 1987, a random length frequency of 200 fish was sexed, with 1 otolith per cm taken; this results in less than the total number of otoliths taken by the pre-1983 system per set, however, this method results in a substantial time savings. Because additional stations were surveyed in each stratum, the total number of otoliths collected was nearly equal to pre-1983 surveys, thus the resulting age length keys for each stratum are as accurate as those prevously obtained. After 1987 the same technique was followed with the addition of recording sexed length frequencies.

For white hake, due to the small catch (over the entire cruise), all fish were individually processed from 1983 to 1987. Since that time, all white hake are processed when time permits, otherwise one fish per centimeter is processed. When stratified subsampling is carried out on white hake a sexed length frequency is required.

Length measurements are usually made with the fish lying on its right side, snout to the left, on an offset measuring board. This consists of a wooden or plastic base carrying a center scale (ruler) that is offset by 0.5 cm and having a vertical 'stop' (nose block) against which the snout is gently pressed. The fish's mouth is closed, the body and tail straightened along the mid-line and the reading taken from the scale (ruler). With an offset board the sampler records the first number visible after the tail; this results in rounding to the nearest whole cm (or half cm when recording to the nearest 0.5 cm). (This is different than the measuring done in commercial sampling for herring where the measuring board is not offset).

An attempt is usually made to measure the whole fish in the fresh, wet condition (that is, as near to the relaxed live condition as possible): -if rigor mortis has set in, the fish should be gently straightened just before measuring. The individual weight should be recorded **before** the fish is opened for internal observations, to prevent the loss of body fluids or internal organs. Weights should be taken with the smallest available scale that has a weight range accommodating the fish being weighed. Small fish that can not be weighed (eg. under 25 g on calm days and under 50 g on rough days) are marked < 25 g or < 50 g. This value is keypunched as 0 or 99999, however it is still necessary for the sampler to record the range of the value to act as a counter check in case of an error in one of the other parameters (eg. length, maturity, etc.).

b. Sex and Maturity

The sexes are readily distinguished in most cases, except for immature fish. Two maturity states are recognized: mature and immature. Mature fish are further subdivided into several ripeness stages. These ripeness stages follow a cyclic pattern (generally annual) and thus there is no beginning or end despite the implication of the numeric codes. The characteristic differences between sexes and ripeness stages vary from species to species and are best demonstrated by an experienced member of the watch.

Table 3.2 Maturity and ripeness stages for use on resource surveys of the southern Gulf of St. Lawrence prior to 1983.

Pre-1983 DEFINITION OF MATURITY/RIPENESS STAGES FOR GADOIDS
(Powles, 1958)

Numeric Code	Alpha Code	Female	Male
1	Immature (Imm)	Ovaries small and firm; pale pink or reddish and somewhat transparent; eggs invisible to naked eye.	Testes slender; appear as a clear crimped and slender string.
2	Ripening 1 (R1)	Ovaries slightly larger than in '1' but still small and firm; contents microscopic, yellow or reddish yellow, opaque eggs; blood capillaries showing.	Testes grow gradually in size; pinkish or flesh coloured; blood capillaries showing.
3	Ripening 2 (R2)	Ovaries occupy about half of the ventral cavity; reddish with numerous blood vessels; opaque eggs are now visible to naked eye and give ovaries a granular appearance.	Testes occupy about half of the ventral cavity; begin to turn white, with fine rather conspicuous blood vessels; no milt runs when pressure is applied.
4	Ripe (R)	Has a few clear eggs at the earliest stage, progressing to having mainly clear eggs, but eggs do not extrude freely with slight pressure. Spawning has not started.	Testes distinctly wavy white and quite distended; large lobes; a small amount of milt may be forced out by pressure.
5	Spawning (Sp'g)	As Stage 4 but eggs running freely on slight pressure.	Testes very white and fully distended; milt runs freely at the slightest pressure.
6	Spent (Sp't)	Ovaries soft, flabby and bloody; practically no eggs remain; purple in colour.	Testes shrunken and reddish; vas deferens prominent against irregular surface of testes; some blood left in organ.
7	Recovering 1 (Rec1)	Membrane purplish and ovaries fairly baggy, no eggs visible.	Testes resume pale pink colour; traces of blood in organ; vas deferens wrinkled and 'string-like'.
8	Resting or Recovering 2 (Rec2)	Looks very much like Stage 1, but is found in large fish; ovary larger than in '1', also membrane thicker and not as transparent as in '1'.	Testes larger than in 1; surface regular; greyish pink in colour.

The above classification applies specifically to haddock and cod and is taken from Powles (1958). Colour photographs of haddock and plaice ripeness stages are posted in the dry labs of some vessels as typical examples. The recorder should write the abbreviation (eg. Imm. or I, Sp'g or RR) of the stage on the "Fish" ("Biological") data sheet rather than the number of the stage. Prior to 1983 an eight stage scale was used for maturity and ripeness (see Table 3.2). Since 1983 only six stages (Table 3.3) are used although the numeric codes are compatible with the earlier series. The pre and post-1983 maturity/ripeness scales are comparable because two ripeness stages were combined in the post-1983 scale (See comparison of regional maturity/ripeness stages - Table 3.4).

Table 3.2 Maturity and ripeness stages for use on resource surveys of the southern Gulf of St. Lawrence after 1983.

Post-1982 DEFINITION OF MATURITY/RIPENESS STAGES FOR GADOIDS
(modified after Powles, 1958 and Clay, 1989)

Numeric Code	Alpha Code	Female	Male
1	Immature (Imm)	Ovaries pale pink, occasionally grey. In small fish membrane is thin and transparent, the ovary slack. In larger fish the membrane is thicker, the ovary more translucent and firmer.	Slender, knobbed, string-like organ. Pinkish in colour without coils or lobes.
2 (3)	Almost Ripe (AR)	Ovary swollen to twice its former length and diameter. Small white opaque eggs numerous and visible to the naked eye, with surface of ovary permeated by small blood vessels. Ovary usually an opaque mass, but sometimes pink or even orange, depending on feeding habits during egg development.	Pinkish to white coloration and increased in volume. Texture pasty, firm and distented with fine, wavy blood vessels. When compressed no milt is expressed.
4	Ripe (R)	Ovary trebled in volume. Individual eggs now larger, discrete, and either transparent or with clusters of transparent eggs within the generally opaque mass of the ovary. Blood vessels less conspicuous. Pressure on ovary causes extrusion of a few eggs.	White and distended into wavy lobules. A small amount of milt may be forced out by pressure.
5	Running Ripe (RR)	Transparent to pink-purplish in colour. Large transparent eggs expressed freely by exertion of pressure on 'jelly-like' mass of the ovary.	Densely white and fully distended. Milt runs freely at the touch.
6	Spent (S)	Nearly all eggs released, ovary purple in color and flaccid. Membrane starts to thicken and shrink, leaving surface whitish with purple showing through.	Testes shrunken and reddish, lying loose in the body cavity. Vas deferens prominent against irregular surface of the organ.
8 (7)	Not Ripe (NR)	Ovary beginning to take on pink or orange hue again, in contrast to purple of the above condition (6). In smaller fish this stage can be confused with the immature condition, but the membrane is thicker and the ovary is firm.	Resumes a pale pink colour, somewhat similar to immature condition but larger.

The recorder should fill in the "Fish" ("Biological") data sheet with the "alpha" ripeness codes during sampling. After the set, when the data is being checked, the corresponding numeric codes should be entered below the alpha codes.

c. Otolith Collection

Otoliths are used for age determination. They are located in the head of the fish and are part of the auditory apparatus. They are extracted by cutting into the head and are withdrawn with forceps. The manner

Table 3.4 Maturity stages used by various agencies in the Atlantic Zone of DFO.

COMPARISON OF MATURITY/RIPENESS STAGES
USED BY THE GULF, SCOTIA-FUNDY, NEWFOUNDLAND AND QUEBEC REGIONS

	Gulf	Scotia-Fundy	Newfoundland and Quebec	All Regions Herring and Small Pelagics
Numeric Code	Groundfish	Groundfish	Groundfish	
1	Immature (Imm)	Immature (Imm)	Immature (Imm)	1 and 2
2	[Almost Ripe (AR)]	Ripening 1 (R1)	Mat. A	4
			Mat. B	4
3	Almost Ripe (AR)	Ripening 2 (R2)	Mat. C	4
4	Ripe (R)	Ripe (R)	Mat. P	5
5	Running Ripe (RR)	Spawning (Sp'g)	Partly Spent	6
6	Spent (SP)	Spent (Spn't)	Spent 1	7
7	[Not Ripe (NR)]	Recovering 1 (R1)	Spent 2	7
8	Not Ripe (NR)	Recovering 2 (R2)	Resting 1	3
		Resting	Resting 2	3

of cutting into the head depends on the species and is best demonstrated by an experienced member of the watch. It requires some practice.

Cod, white hake, redfish, haddock, cusk and pollock otoliths are stored dry in envelopes. All other species are stored in vials containing the following formula:

75% glycerin		70% glycerin
25% seawater	or	20% seawater
Thymol* (saturate)		10% methanol

*** - Caution: carcinogenic compound**

The vials or envelopes are numbered consecutively from 1 for each species and the sequence should be continuous throughout the survey, even if the survey is comprised of two consecutive cruises or legs. The number on the "Fish" ("Biological") data sheet must correspond to the number on the vial or envelope. This should be checked regularly (eg. every 10 fish or every data sheet). At the end of each set and particularly at the end of a watch, the number of the last otolith collected for each species is marked on a 'black' or 'white' board, mounted on the wall of the dry lab. Individual fish are assigned numbers only if otoliths are taken from them, otherwise the field for fish number is left blank. Detailed observations on a fish (eg. length, weight, sex, stomach contents, etc.) can be recorded without collecting otoliths - in this case, the fish number is zero or blank.

Mark otolith vial labels as follows:

PLA 161	- species and fish number
H204	- cruise number

The otolith envelopes should be inscribed in the following manner:

COD 1264	- species and fish number
P296/Set 68	- cruise and set number
TL 47	- total or fork length

d. Special Observations and Collections

Usually there are a number of special requests for specimens or observations from interested scientists.

These requests are important to the person involved and should be accommodated whenever possible;
 - **however the cruise design and sampling objectives always come first.**

Specimens are generally collected and special observations made after the routine sampling requirements have been met.

Since 1986 the detailed "Fish" ("Biological") data sheets have had a series of optional (user definable fields) columns added to their format. The use of these columns should be:

1. explained to the scientific crew before the cruise begins (see Chapter IV for instructions) and

2. recorded in the cruise report so that anyone using the data in the future will be aware of differences in the data structure for that cruise.

Figure 3.1 Flowchart of the sequence of events and data sheets used during survey operations (1970-1985) (after Koeller, MS 1981).

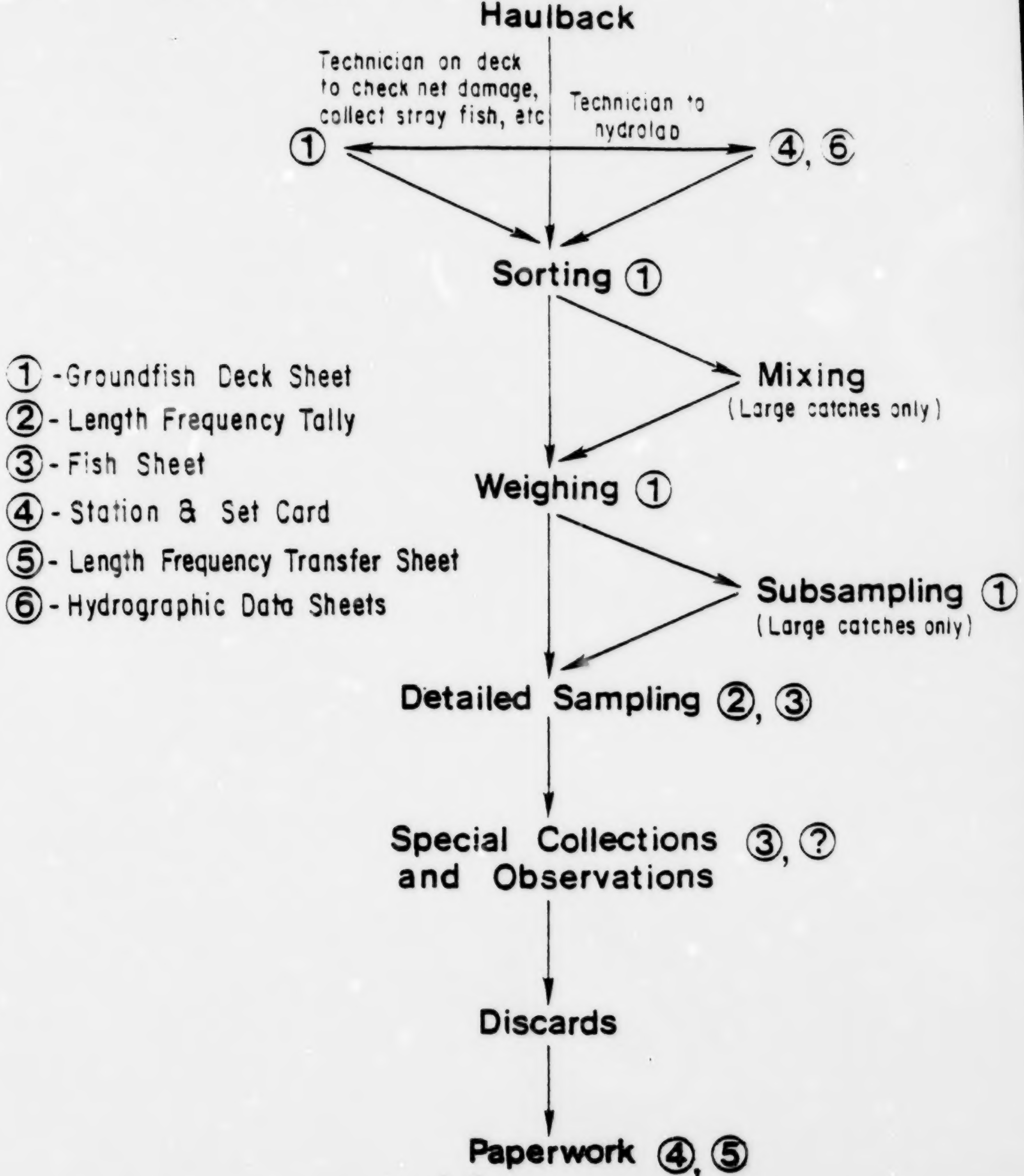

Haulback
Technician on deck to check net damage, collect stray fish, etc
Technician to hydrolab
①
④, ⑥
Sorting ①
Mixing
(Large catches only)
Weighing ①
Subsampling ①
(Large catches only)
Detailed Sampling ②, ③
Special Collections and Observations ③, ?
Discards
Paperwork ④, ⑤
① - Groundfish Deck Sheet
② - Length Frequency Tally
③ - Fish Sheet
④ - Station & Set Card
⑤ - Length Frequency Transfer Sheet
⑥ - Hydrographic Data Sheets

Figure 3.2 Flowchart of the sequence of events and data sheets used during survey operations (after 1985) (after Koeller, MS 1981).

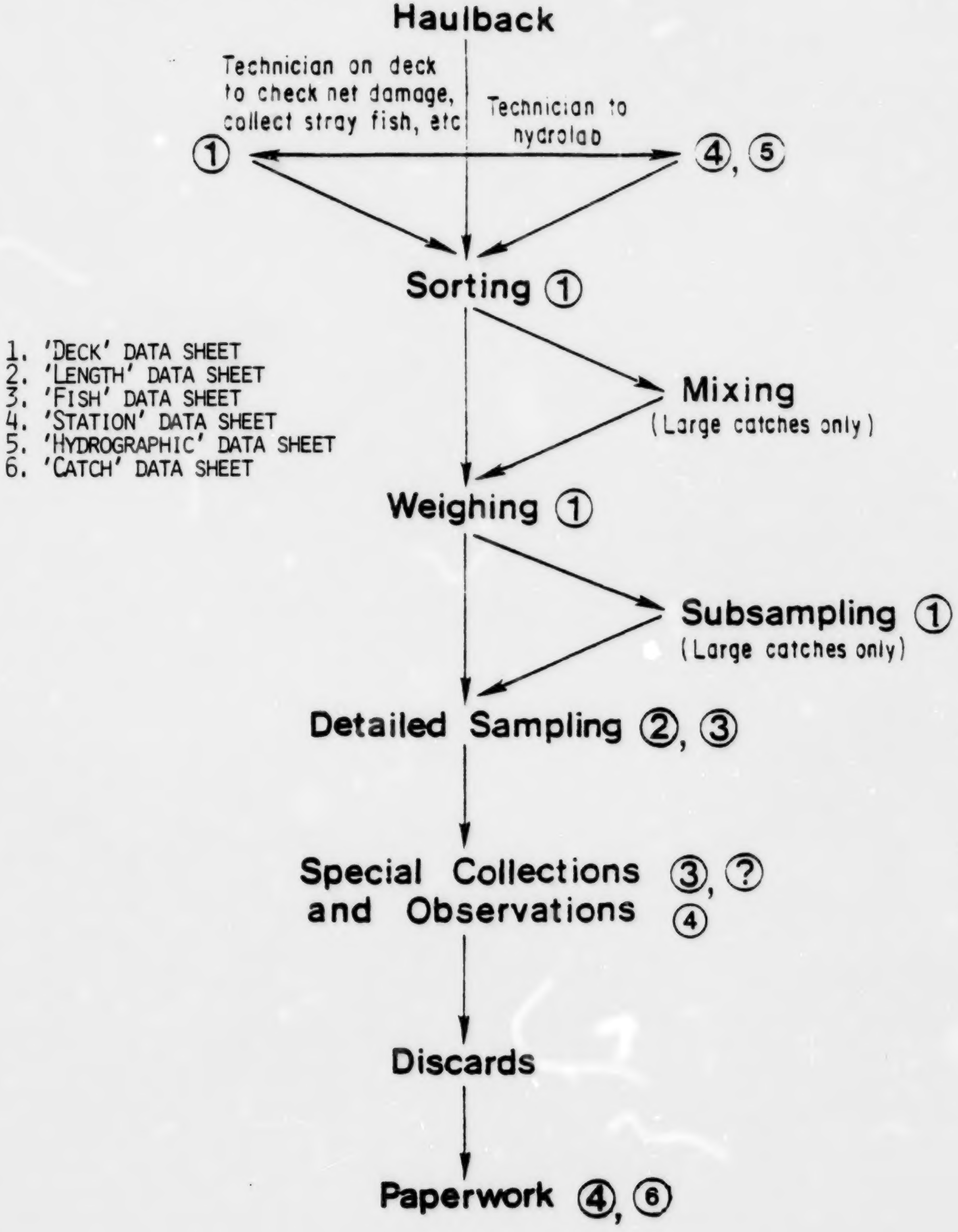


Figure 3.3 Example of the three basket "Dutch Shuffle" described in the text (after Koeller, MS 1981).

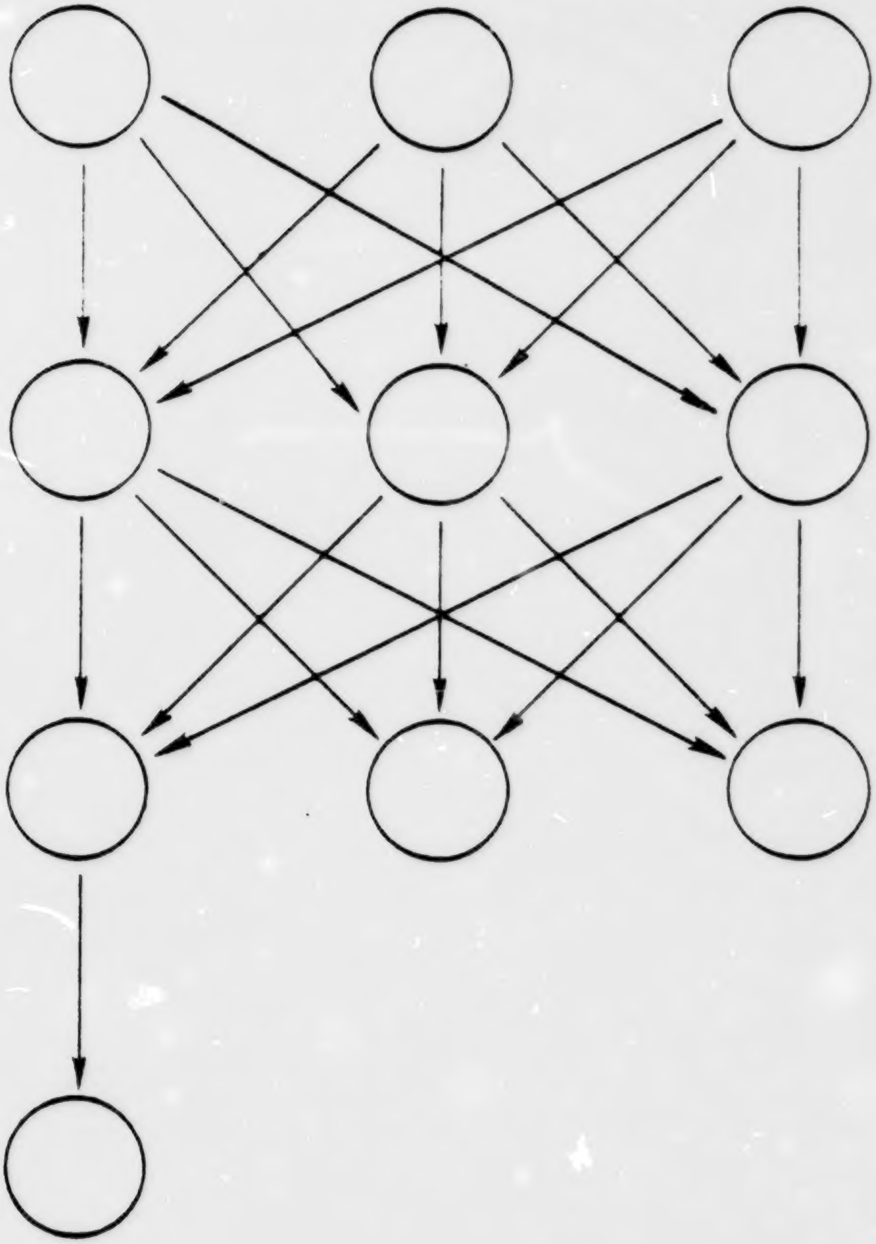
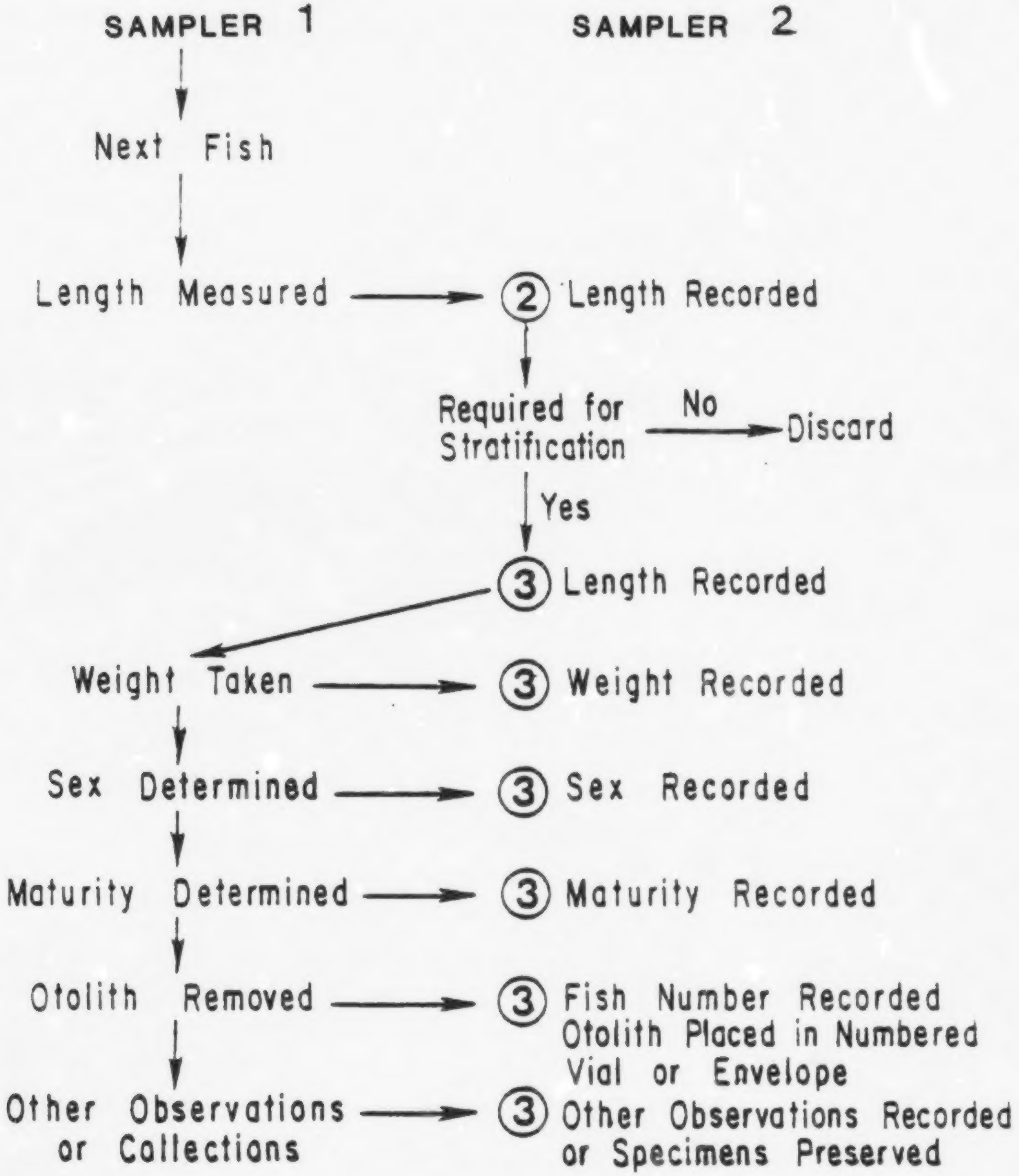


Figure 3.4 Flowchart of the events occurring during typical detailed sampling operations (after Koeller, MS 1981).



IV. COMPLETING THE DATA RECORDING SHEETS

Revised and updated coding forms were designed after the 1985 comparative fishing survey in preparation for the 1986 season.

Examples of each type of data sheet used prior to 1986 are given in Appendix 4.1 (Figures 4.1 to 4.6). Forms used since 1986 are given in Appendix 4.2 (Figures 4.1 to 4.6). The use of each of these forms is explained in the following text. The revised forms were designed with the objectives of improving efficiency of data capture and maintaining compatibility between the pre and post-revision forms. A glossary of terms used on these forms is provided in Appendix 4.3.

1. "Deck" data sheet (Appendices 4.1 and 4.2; Figure 4.1)

This data sheet is used for recording of the initial sorting, weighing and subsampling procedures and observations. Be sure to note the cruise, date and especially the set number. The "notes" and "biases" section should be filled out carefully. Information which may seem trivial at the time can prove to be important later when the data is being coded, edited and analysed. Baskets in a subsample must be put aside where they can be identified, and their weights must be circled on the "Deck" data sheet. It is from this data that the "ratio sampled" is later calculated. Every species seen in the holding bin or on the deck must be recorded. **This is the only list against which completeness of the following work can be checked.** The only major change made to the pre-1986 form (Appendix 4.1 Figure 4.1) was the addition of a numbers column (eg. numbers of individuals). This change facilitates quantification of species such as snow crabs, toad crabs, smelt, hookear sculpins, etc., that often do not weigh enough to be recorded by a basket weight. Most invertebrates should be recorded as numbers, as well as weight, even when the weight is significant. On the reverse of this revised data sheet (Appendix 4.2 Figure 4.1) is a list of codes used on the "Station" data sheet.

2. "Station" data sheet (Appendices 4.1 and 4.2; Figure 4.2)

This data sheet must be brought from the bridge to the dry lab after completion of the tow (usually via the hydrolab after completion of the BT cast).

Prior to 1986, the "Station and Set" data sheet had the "Catch" sheet on its reverse side - in the 1986 revisions the "Catch" data sheet was made a seperate data form.

Prior to 1983, the watch member responsible for hydrography recorded the BT slide number, the hydrographic station number and the surface temperature on the "Station and Set" data sheet (Appendix 4.1 Figure 4.2). Since 1983, the BT slide number and hydrographic station number utilize the same numeric value as the set number and are no longer filled in.

The number of fish species and invertebrate species as well as the total weight of the fish caught, are all obtained from the "Deck" data sheet, and entered here. The "remarks" section should again be completed carefully by transferring important information from the "Deck" data sheet, particularly that pertaining to net damage and other biases. If a set was invalid, a note must be made here and initialled by the Chief Scientist. Frozen and preserved specimens should be listed here as a record of their existence.

Since the 1986 revisions, several fields have been altered. They now are composed of 'beginning and end' values rather than start and difference values (eg. time and depth). On the reverse of this revised data sheet (Appendix 4.2 Figure 4.2) is an alphabetized list of the major species by their common names and their respective codes, as well as the page number in the taxonomic manual by Scott and Scott (1988) (Atlantic Fishes of Canada).

3. "Catch" data sheet (Back of pre-1986 "Station and Set" data sheet) (Appendix 4.1 Figure 4.3 and Appendix 4.2 Figure 4.3)

There was a slight rearrangement of the columns on this data sheet (Appendix 4.1 Figure 4.3) with the 1986 revision, however, no other changes were made in either its layout or purpose. Information obtained from the "Deck" data sheet, "Length" data sheet and "Fish" ("Biological") data sheets are summarized here.

Note, that the actual numbers of specimens sampled for length, sex, maturity, etc., are required (not simply a check mark). Most of the commonly encountered demersal fish and invertebrate species and their respective numeric codes are listed on the reverse side of the "Station" data sheet. A list of aquatic species recorded from in Canadian marine and neighbouring freshwater habitats is found in Appendix III.

Prior to 1986 weight was recorded only to the nearest kilogram. If the catch weighed less than 0.5 kg a 0 was entered. Since 1986 (Appendix 4.2 Figure 4.3), the weight is recorded to the nearest kilogram if over a kilogram and to the nearest 0.05 kg if under 1 kg.

Baskets are recorded to the nearest 1/10th and entered as 0 if less than 1/10th of a basket.

If an observation was not made for any category, leave it blank.

4. "Length Frequency Tally" data sheet (Appendix 4.1 Figure 4.4)

Prior to 1986 the "Length Frequency Tally" data sheet (Appendix 4.1 Figure 4.4) was used for recording the length frequency, the data were later transcribed to the "Length Frequency Transfer" data sheet (Appendix 4.1 Figure 4.5). The species and set number must be filled in at the time of sampling, and the rest completed immediately after.

Three methods (in order of priority) of calculation of the RATIO sampled are possible:

1. numbers sampled / numbers caught
2. weight sampled / weight caught
3. baskets sampled / baskets caught

These are in order of preference, but usually the second method is used. Prior to the 1986 revisions, the ratio was not calculated but left as a fraction (eg. 103/621 fish, 12/60 kg or 10/200 baskets). In the lower part of the form, the heavy horizontal lines indicate the three centimeter groupings required for some species on the "Length Frequency Transfer" data sheets. The tally marks per centimeter were summed at the end of the line as indicated. The vertical dashed lines were used when sexes were recorded separately. In the example, three fish per sex were stratified and kept for detailed analysis. The first three tally marks at each length interval were kept separate to aid in distinguishing sizes which have been sampled completely in detail and the data recorded on the "Fish" ("Biological") data sheet.

5. "Length Frequency (Transfer)" data sheet (Appendix 4.1 Figure 4.5 and Appendix 4.2 Figure 4.4)

The double recording required for this data sheet was eliminated in the revision of 1986. Prior to 1986 it was used to summarize subsampling information and length frequency data obtained from the "Length Frequency Tally" data sheet. Commonly, only numbers caught and sampled (for length) were entered for each species, and for each sex if lengths by sex were to be determined. Weight caught and sampled was entered if a weighed subsample has been measured. The ratio from the "Length Frequency Tally" data sheet was entered, as a decimal fraction to two significant figures (without the decimal). Total numbers were not calculated from the ratio if subsampling was done - this field was left blank. If no subsampling was necessary (ie. all fish were measured) "00" was entered for the ratio - this indicated a 100% ratio. For sex, the following applicable codes were entered:

0 - fish examined for sex but could not be determined
1 - male
2 - female
4 - species sexed on the "Fish" ("Biological") data sheet but not on the "Length Frequency Tally" or "Length Frequency Transfer" data sheets
9 - species not examined for sex

The type of sampling (ie. whether 0-1-2; 4 or 9) and other detailed requirements needed for each species should be indicated in the cruise program. The routine sampling requirements (prior to and subsequent to 1983) for groundfish cruises are outlined in Tables 4.1 and 4.2.

Length data from the "Length Frequency Tally" or the "Fish" ("Biological") data sheets was transferred to the "Length Frequency Transfer" data sheet (Appendix 4.1 Figure 4.5) either unchanged, or grouped into 2 or 3 centimeter groups. The species requiring 3 centimeter grouping were indicated on the bottom of the sheet and only these species were so grouped. Only haddock were grouped by 2 centimeters. All others were transferred unchanged from the "Length Frequency Tally" data sheet. The lengths on the "Length Frequency Transfer" data sheet for the 3 and 2 centimeter groups, represent the middle length group for each grouping. Thus, for example, all fish measuring 96, 97 and 98 centimeters were represented by 97 in the 3 cm group, and all haddock measuring 60 and 61 centimeters were represented by 60.5. Note that the example (Appendix 4.1 Figure 4.5) requires two sheets, only one of which is shown.

Since the 1986 revision, the ratio is no longer calculated at sea, instead both the numerator and denominator of the ratio (either: # sampled/# caught, weight sampled/weight caught or baskets sampled/baskets caught) are entered (Appendix 4.2 Figure 4.4). **During data entry these values are used to calculate the ratio as described above. The ratio is used**

Table 4.1 Sampling requirements prior to 1983 for marine fish and other species frequently caught in the resource surveys of the southern Gulf. Since 1983 all fish have been measured and sampled by 1 cm groupings (see Table 4.2).

Species	Sex	Maturity	Grouping (cm)	Otolith Dry	Otolith Wet
Cod					
Atlantic	4	x	3	x	
Greenland	4	x	1		
Haddock	4	x	2	x	
Hake					
Longfin	4		1		
Silver	1-2-0	x	1		x
White	1-2-0	x	3	x	
Pollock	4	x	3	x	
Flounder					
Plaice	1-2-0	x	1		x
Windowpane (Brill)	1-2-0	x	1		x
Winter	1-2-0	x	1		x
Witch	1-2-0	x	1		x
Yellowtail	1-2-0	x	1		x
Halibut					
Atlantic	1-2-0	x	3		x
Greenland	1-2-0	x	1		x
Redfish	1-2-0	x	1	x	
Wolffish					
Atlantic	9		3		
Northern	9		3		
Angler	9		3		
Wrymouth	9		1		
Grenadier	9		1		
Eelpout	9		1		
Rock gunnel (rock eel)	9		1		
Ocean pout	9		1		
Sea raven	9		1		
Fourbeard rockling	9		1		
Lumpfish	9		1		
Alligatorfish	9		1		
Sculpin					
Hookear	9		1		
Longhorn	9		1		
Mailed	9		1		
Dogfish					
Spiny	1-2-0		3		
Black	1-2-0		1		
Skate					
Thorny	1-2-0		3		
Winter (Eyed)	1-2-0		3		
Herring	9	x	1	x	
Mackerel	9	x	1	x	
Capelin	9		1		
Alewife (Gaspereau)	9		1		
Smelt	9		1		
Shad	9		1		
Squid	9		1		

Sex coding

1-2-0: 1 = male, 2 = female, 0 = undetermined (ie. length frequencies are required by sex).
4: Species sexed but not separately on "Length Frequency Transfer" data sheet.
9: Species not sexed.

Herring and mackerel: detailed analysis (ie. sex, maturity and otoliths are generally done on land). (Random samples are frozen and returned to the laboratory whenever requested by assessment biologists).

Otolith Storage: Dry: envelope
Wet: vial with glycerin solution

N.B. All the other species found should be sex = 9, grouping = 1 until further notice.

Table 4.2 Sampling requirements subsequent to 1982 for marine fish and other species frequently caught in the resource surveys of the southern Gulf.

Species	Sex	Maturity	Grouping (cm)	Otolith Dry	Otolith Wet
Cod					
Atlantic	4	x	1	x	
Greenland	4	x	1		
Haddock	4	x	1	x	
Hake					
Longfin	4		1		
Silver	4	x	1		x
White	0-1-2 *	x	1	x	
Pollock	4	x	1	x	
Flounder					
Plaice	0-1-2 **	x	1		x
Windowpane (Brill)	0-1-2 **	x	1		x
Winter	0-1-2 **	x	1		x
Witch	0-1-2 **	x	1		x
Yellowtail	0-1-2 **	x	1		x
Halibut					
Atlantic	0-1-2 **	x	1		x
Greenland	0-1-2 **	x	1		x
Redfish	0-1-2	x	1	x	
Wolffish					
Atlantic	4		1		
Northern	4		1		
Angler	9		1		
Wrymouth	4		1		
Grenadier	9		1		
Eelpout	4		1		
Rock gunnel (rock eel)	9		1		
Ocean pout	4		1		
Sea raven	4		1		
Fourbeard rockling	9		1		
Lumpfish	4		1		
Alligatorfish	9		1		
Sculpin					
Hookear	9		1		
Longhorn	9		1		
Mailed	9		1		
Dogfish					
Spiny	0-1-2		1		
Black	0-1-2		1		
Skate					
Thorny	0-1-2		1		
Winter (Eyed)	0-1-2		1		
Herring	4	x	1	x	
Mackerel	4	x	1	x	
Capelin	4		1		
Alewife (Gaspereau)	4		1		
Smelt	9		1		
Shad	4		1		
Squid	9		1		

Sex coding: as for Table 4.1
Herring and mackerel: as for Table 4.1
Otolith Storage: as for Table 4.1

N.B. All the other species found should be sex = 9, grouping = 1 until further notice.

* - sexed length frequencies are recorded for white hake whenever sampling the entire catch is impossible.

** - from 1983 to 1986 these species were all sexed but not seperated on the "Length" data sheet.

in the calculation of the Nos. Caught field - a value that is not keypunched. To ensure that the value entered here (and subsequently on the "Catch" data sheet) agrees with the value estimated by the computer during the data edit it is imperative that the ratio used be rounded to two significant digits - otherwise there will be a discrepency.

6. "Fish" ("Biological") data sheet (Appendix 4.1 Figure 4.6 and Appendix 4.2 Figure 4.5)

This data sheet is used for recording detailed observations on individual specimens. When recording it is necessary to mark the set number, species and type of sample. The other information can be completed immediately after sampling. Type of sample is marked "T" (for total), "R" (for random), and "S" (for stratified). This refers to the type of sampling for detailed observations only, not for length frequencies, (eg. a random sample of 5 baskets from a total catch of 20 was measured). Detailed sampling usually consisted of a stratified sample from the 5 baskets and would be marked as "S". If all fish in the 5 baskets were examined for detail then "R" would be entered. "T" is marked only if all the fish caught were examined (ie. in this case all 20 baskets).

On the revised (1986) "Fish" ("Biological") data sheet (Appendix 4.2 Figure 4.5), six of the historic data fields (five fields previously used to record stomach content data and one field used for recording parasite data) have been made variable by the addition of a six character field called a "field definition". This change permits the use of these six data fields for the recording of other data pertaining to each specimen sampled. If all six characters in the field definition are left blank or filled with zero's, then all the fields retain their historic pre-1986 assignment. However, if any of the fields in the field definition are non-zero then the assignment of one or more of the six data fields has been altered (eg. to reassign PARASITE from its historic value to liver weight in grams the field definition would read "_ _ _ _ _ 1").

Table 4.3 describes the changes to these fields and the associated field definitions that control reassignment of these data fields.

Length is recorded to the nearest centimeter and weight in grams.

If a hard part is sampled for age determination, a unique sequential number is assigned to the specimen and the appropriate code (see below) is marked under: "Type" for "Ageing Material".

1	Indicates otoliths sampled
2	Indicates scales sampled
3	Indicates fin rays sampled
4	Indicates vertebrae sampled
5	Indicates otoliths and scales sampled
9	Indicates no observation

Sex should be coded according to the following table:

0	Indicates unspecified
1	Indicates male
2	Indicates female
3	Indicates hermaphrodite
9	Indicates no observation

Maturity should usually be recorded as the abbreviation of the stage (ie. Imm., R, AR, etc. - see Tables 3.2 and 3.3) rather than the numeric code for the maturity stage. The boxes are for coding purposes. If possible the coding is completed by the recorder at sea - values for which the code is not known are filled in at a later date upon clarification of the respective codes. However, when codes are not known, the value or observation should be recorded in the open area above the "boxed" single character fields.

Notes on Paperwork

After sampling and recording, the paperwork for the set should be completed immediately. Mistakes are most easily corrected when details of the sampling operation are still fresh in everyone's mind. Paperwork involves systematic checking, filling in of any missing information on the "Fish" data sheets, "Length" data sheets and completing the "Catch" data sheet and the "Station" data sheet. The watch member in charge of paperwork is responsible for seeing that all data are entered accurately and all records brought up to date and any discrepencies noted for later clarification.

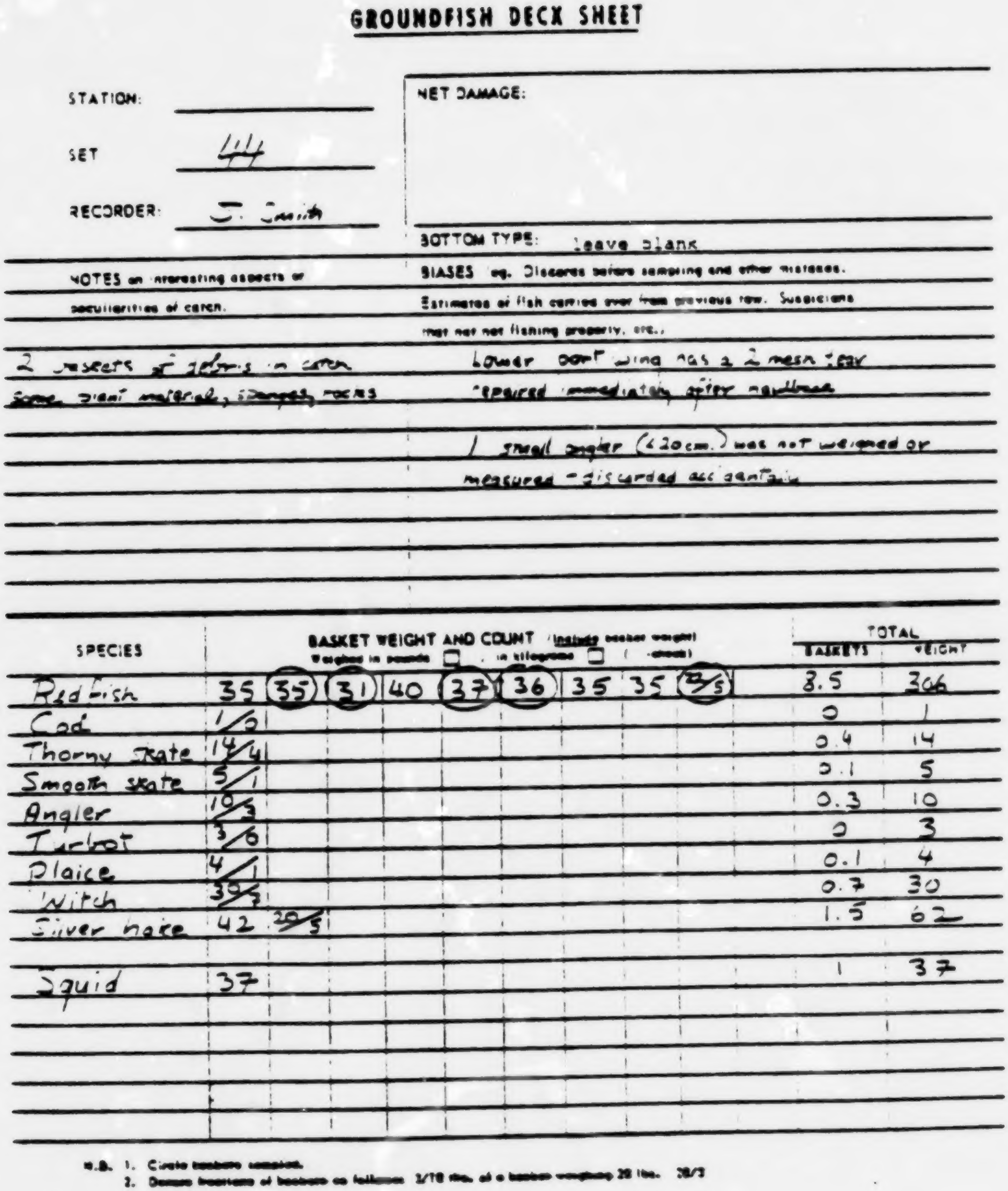
Note that all sheets have spaces for the name of the recorder and/or samplers. This information should always be filled in, so that if mistakes are made the originator can be easily identified and if possible the mistake can be rectified. Everybody makes a mistake occasionally which cannot be rectified. For example, fish are dumped before they could be weighed. Admit this mistake by noting what happened, on the "Deck" data sheet. In this case, a weight can be calculated from length frequency data and substituted during the computer edit. **Under no circumstances, is it acceptable to guess or invent a suitable value.**

Table 4.3 Codes used for the user definable (Use.Def.) fields described on page 4 - 5. All codes of zero or blank default to the pre-1986 data fields.

ORIGINAL DATA FIELD (pre-1986)	REVISED DATA FIELD HEADING (1986)	CODE Use.Def. FIELD	DATA FIELD ASSIGNMENT
Stomach condition	Stomach type	0	Stomach condition
			0 Indicates empty
			1 Indicates everted
			2 Indicates slit
			3 Indicates preserved
			4 Indicates food present
			9 Indicates no observation
		1	Stomach type
		2	Tagging character (from Tag)
No. of species in stomach	Stomach fullness	0	No. of species in stomach
		1	Stomach fullness (1/10,2/10,etc.)
		2	Standard length (in cm.)
		3	Stomach weight-without contents (in gr.)
Stomach volume	Stomach weight	0	Stomach volume (in cc.) (to 1 decimal place)
		1	Stomach weight - with contents (in gr.)
		2	Fish weight (2^{nd} reading) (in gr.)
		3	Girth (in mm.)
		4	Tag number
		5	Gutted weight (in gr.)
Stomach part	blank	0	Stomach part (1/10, 2/10, etc. made up of a species)
		1	Standard length (in cm.)
Parasite (composite code)	blank	0	Parasite (3 character code)
First Column: SPECIES IDENTITY			1 Indicates *Ichthyosporidium* sp. (yellowtail, plaice, w. hake)
			2 Indicates protozoan (silver hake gills)
			3 Indicates any external parasite (all skate)
			4 Indicates *Lernaeacera* sp. (cod gills)
			5 Indicates *Eimeria gadii* (haddock) etc.
			6 Indicates nematodes (stomach) mackerel
			7 Indicates *Porrocaecum (Pseudoterranova) decipens* (codworm)
			8 Indicates pseudobranch tumors (cod)
Second Column: SITE OF INFESTATION			1 Indicates the body of cod
			2 Indicates the gills of cod
			3 Indicates the liver of yellowtail and plaice
			4 Indicates haddock gas bladder disease
			5 Indicates the stomach of haddock
			6 Indicates flesh (codworm) or muscle
			7 Indicates the gills (pseudobranch tumors)
Third Column: INTENSITY OF INFESTATION			0 Indicates examined but not infested
			1 Indicates slight infestation
			2 Indicates moderate infestation
			3 Indicates heavy infestation
			4 Indicates very heavy infestation
			5 Indicates extreme infestation
			9 Indicates no observation
OR			
Third Column: FOR PSEUDOBRANCH TUMORS			0 Examined but not present
			1 Left pseudobranch
			2 Right pseudobranch
			3 Left and right pseudobranch
			9 Not examined
		1	Liver weight (in gr.)
		2	1^{st} dorsal length (in cm.)
Stomach species code	Gonad weight	0	Stomach species code
		1	Gonad weight (in gr.)
		2	Head-off weight (in gr.)

APPENDIX 4.1

Figure 4.1 Example of a completed "Deck" data sheet (pre-1986).



GROUNDFISH DECK SHEET

STATION:

SET 44

RECORDER: J. Smith

NET DAMAGE:

BOTTOM TYPE: leave blank

NOTES on interesting aspects or peculiarities of catch.

2 baskets of debris in catch

Some plant material, sponges, rocks

BIASES eg. Discards before sampling and other mistakes. Estimates of fish carried over from previous tow. Suspicions that net not fishing properly, etc.,

Lower port wing has a 2 mesh tear

repaired immediately after haulback

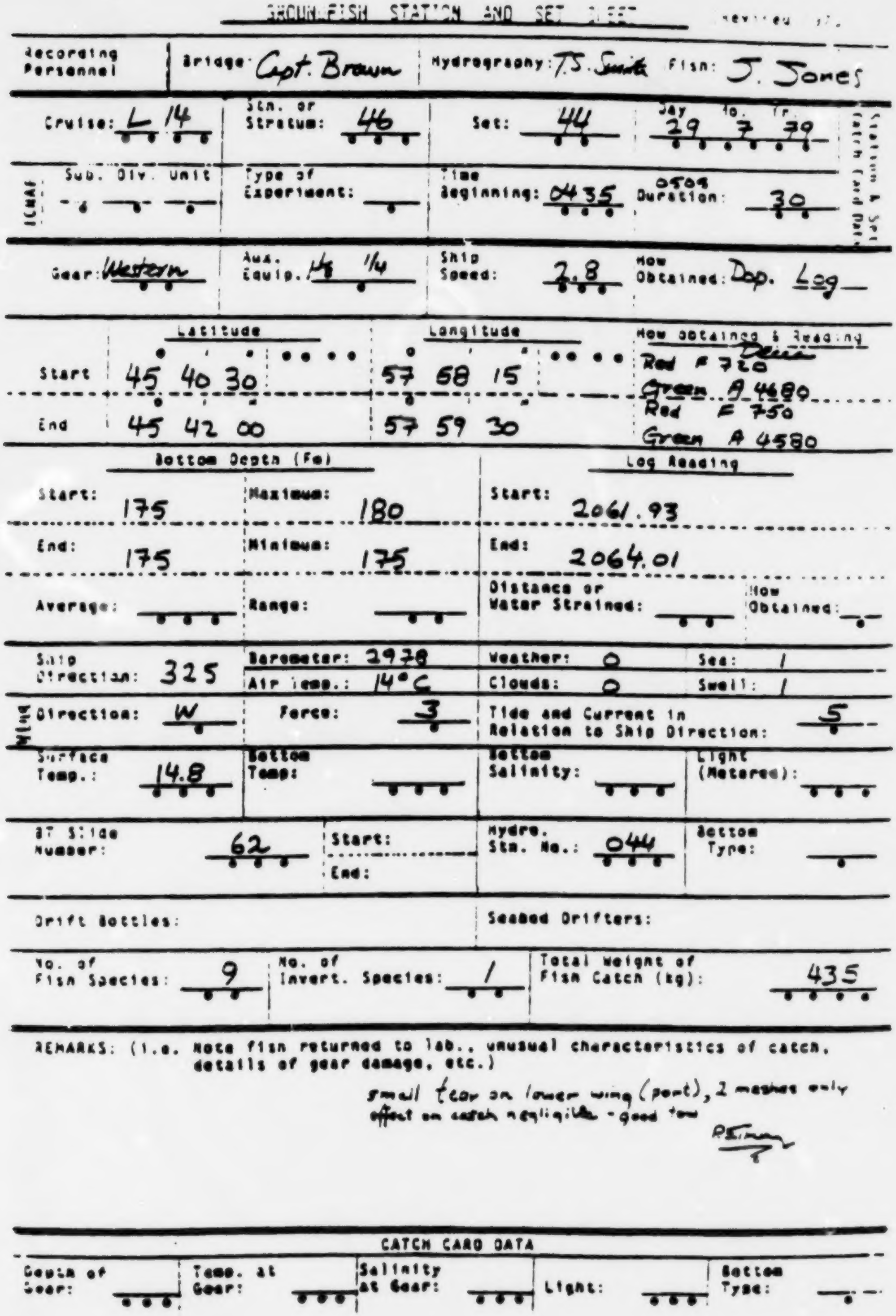
1 small angler (<20cm.) was not weighed or

measured - discarded accidentally

SPECIES	BASKET WEIGHT AND COUNT (include basket weight) Weighed in pounds ☐, in kilograms ☐ (check)									TOTAL BASKETS	TOTAL WEIGHT
Redfish	35	35	31	40	37	36	35	35	23/5	8.5	306
Cod	1/2									0	1
Thorny skate	14/4									0.4	14
Smooth skate	5/1									0.1	5
Angler	10/3									0.3	10
Turbot	3/6									0	3
Plaice	4/1									0.1	4
Witch	30/3									0.7	30
Silver hake	42	20/5								1.5	62
Squid	37									1	37

N.B. 1. Circle baskets sampled.
2. Denote fractions of baskets as follows: 3/10 ths. of a basket weighing 20 lbs. 20/3

Figure 4.2 Example of a completed "Station and Set" data sheet (pre-1986). (This form was on the reverse side of the "Catch" data sheet).



GROUNDFISH STATION AND SET SHEET   Revised [illegible]

Recording Personnel | Bridge: Capt. Brown | Hydrography: T.S. Smith | Fish: J. Jones

Cruise: L 14 | Stn. or Stratum: 46 | Set: 44 | Day 29 Mo. 7 Yr. 79

ICNAF Sub. Div. Unit | Type of Experiment: | Time Beginning: 0435 | 0505 Duration: 30

Station & Set Catch Card Data

Gear: Western | Aux. Equip. Hg 1/4 | Ship Speed: 2.8 | How Obtained: Dop. Log

	Latitude ° ′ ″	Longitude ° ′ ″	How Obtained & Reading Decca
Start	45 40 30	57 58 15	Red F 720 Green A 4680
End	45 42 00	57 59 30	Red F 750 Green A 4580

Bottom Depth (Fm)

Start: 175 | Maximum: 180

End: 175 | Minimum: 175

Average: | Range:

Log Reading

Start: 2061.93

End: 2064.01

Distance or Water Strained: | How Obtained:

Ship Direction: 325 | Barometer: 2978 | Air Temp.: 14°C | Weather: 0 | Sea: 1 | Clouds: 0 | Swell: 1

Wind Direction: W | Force: 3 | Tide and Current in Relation to Ship Direction: 5

Surface Temp.: 14.8 | Bottom Temp: | Bottom Salinity: | Light (Metered):

BT Slide Number: 62 | Start: | End: | Hydro. Stn. No.: 044 | Bottom Type:

Drift Bottles: | Seabed Drifters:

No. of Fish Species: 9 | No. of Invert. Species: 1 | Total Weight of Fish Catch (kg): 435

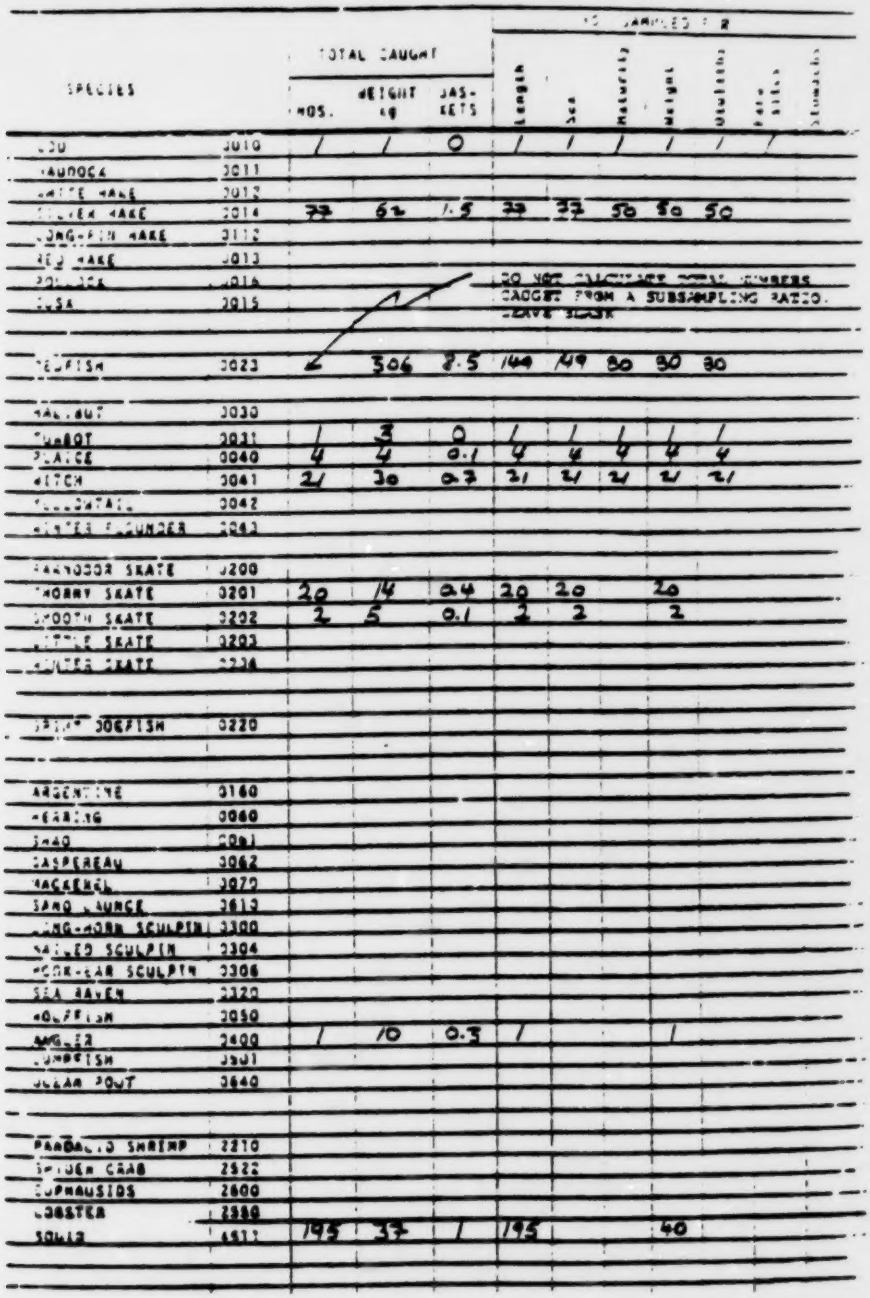
REMARKS: (i.e. Note fish returned to lab., unusual characteristics of catch, details of gear damage, etc.)

small tear on lower wing (port), 2 meshes only
effect on catch negligible - good tow

CATCH CARD DATA

Depth of Gear: | Temp. at Gear: | Salinity at Gear: | Light: | Bottom Type:

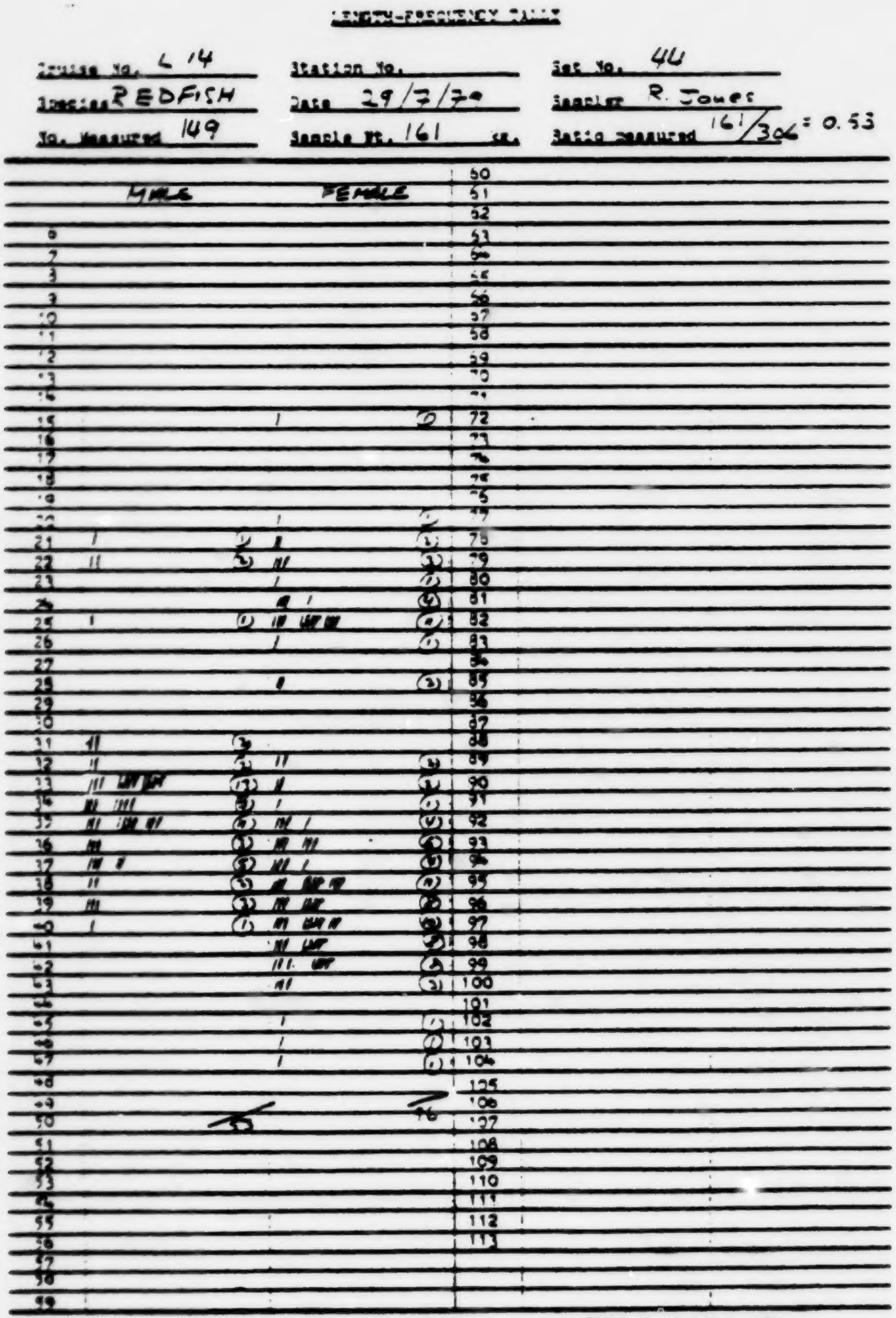
Figure 4.3 Example of a completed "Catch" data sheet (pre-1986). (This form was on the reverse side of the "Station and Set" data sheet).



SPECIES		TOTAL CAUGHT			NO. SAMPLED FOR						
		NOS.	WEIGHT kg	BAS-KETS	Length	Sex	Maturity	Weight	Otoliths	Data slips	Stomachs
COD	0010	1	1	0	1	1	1	1	1	1	
HADDOCK	0011										
WHITE HAKE	0012										
SILVER HAKE	0014	77	62	1.5	77	77	50	50	50		
LONG-FIN HAKE	0112										
RED HAKE	0013										
POLLOCK	0016										
CUSK	0015										
REDFISH	0023		306	8.5	149	149	80	80	80		
HALIBUT	0030										
TURBOT	0031	1	3	0	1	1	1	1	1		
PLAICE	0040	4	4	0.1	4	4	4	4	4		
WITCH	0041	21	30	0.7	21	21	21	21	21		
YELLOWTAIL	0042										
WINTER FLOUNDER	0043										
BARNDOOR SKATE	0200										
THORNY SKATE	0201	20	14	0.4	20	20		20			
SMOOTH SKATE	0202	2	5	0.1	2	2		2			
LITTLE SKATE	0203										
WINTER SKATE	0204										
SPINY DOGFISH	0220										
ARGENTINE	0160										
HERRING	0060										
SHAD	0061										
GASPEREAU	0062										
MACKEREL	0070										
SAND LANCE	0610										
LONG-HORN SCULPIN	0300										
SAILED SCULPIN	0304										
HOOK-EAR SCULPIN	0306										
SEA RAVEN	0320										
WOLFFISH	0050										
ANGLER	0400	1	10	0.3	1			1			
LUMPFISH	0501										
OCEAN POUT	0640										
PANDALID SHRIMP	2210										
SPIDER CRAB	2522										
EUPHAUSIIDS	2600										
LOBSTER	2550										
SQUID	4511	195	37	1	195			40			

DO NOT CALCULATE TOTAL NUMBERS CAUGHT FROM A SUBSAMPLING RATIO. LEAVE BLANK

Figure 4.4 Example of a completed "Length Frequency Tally" data sheet (pre-1986).



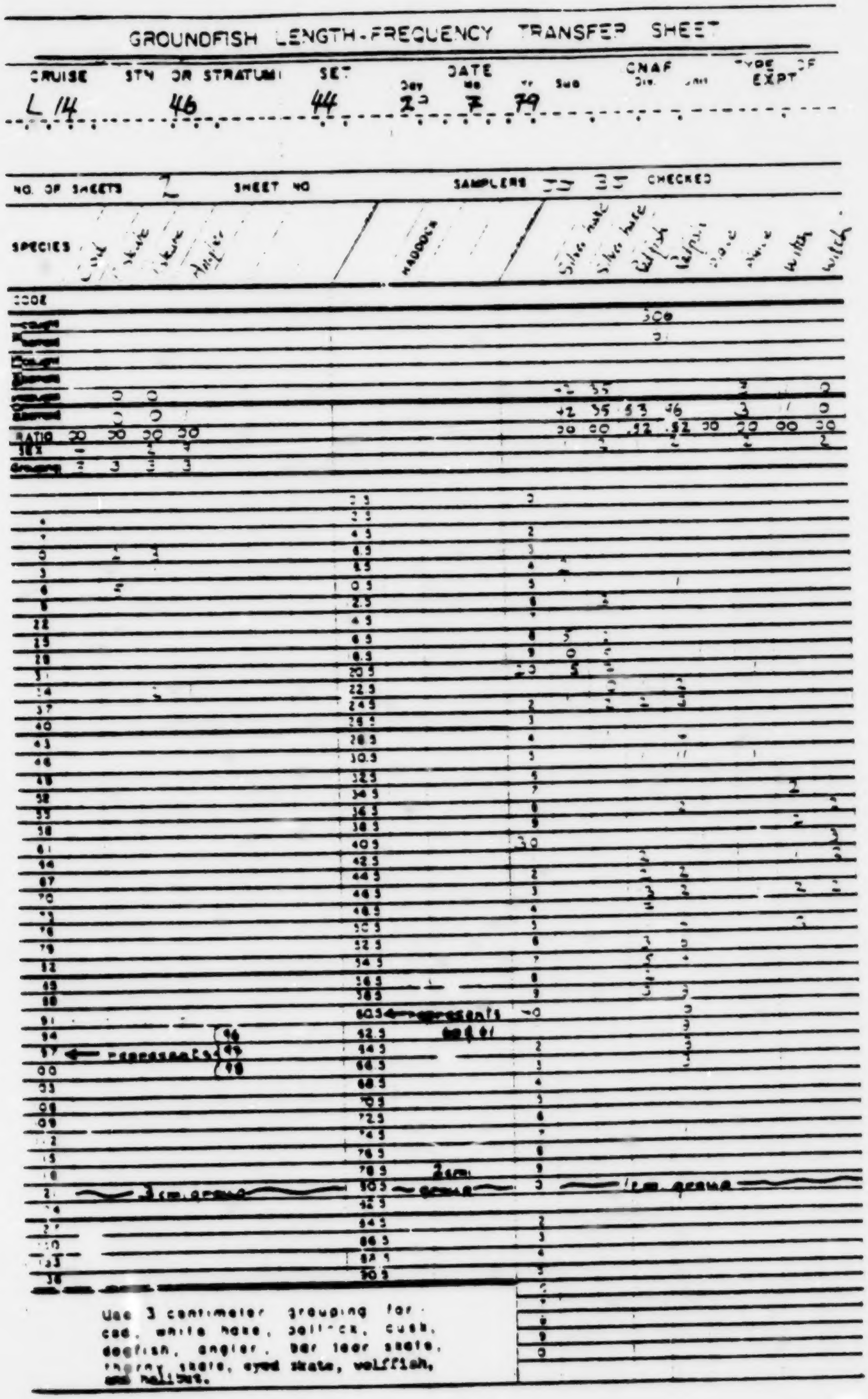
LENGTH-FREQUENCY TALLY

Cruise No. L 14
Station No.
Set No. 44
Species REDFISH
Date 29/7/79
Sampler R. Jones
No. Measured 149
Sample Wt. 161 kg.
Ratio Measured 161/306 = 0.53

MALE FEMALE

Form 0.13 (Jan./70)

Figure 4.5 Example of a completed "Length Frequency Transfer" data sheet (pre-1986).



GROUNDFISH LENGTH-FREQUENCY TRANSFER SHEET

CRUISE	STN OR STRATUM	SET	DATE Day	Mo	Yr	Sub	CNAF Div.	Unit	TYPE OF EXPT
L 14	46	44	2?	7	79				

NO. OF SHEETS 2 SHEET NO SAMPLERS CHECKED

SPECIES Cod, Skate, Skate, Angler, HADDOCK, Silver hake, Silver hake, Redfish, Redfish, Plaice, Plaice, Witch, Witch

CODE

RATIO

SEX

Grouping

← represents 96 97 98

← represents 60.0–61

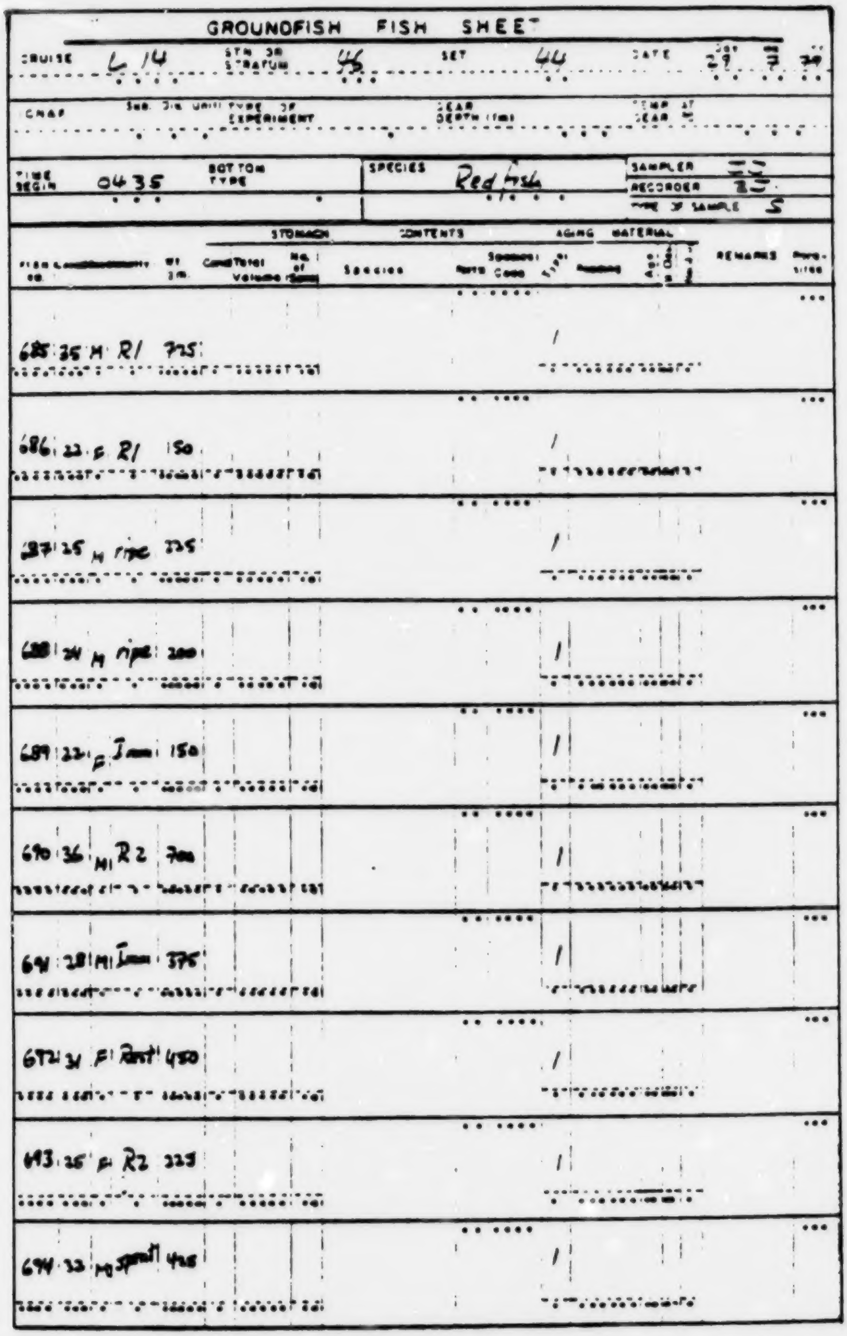
3 cm group

2 cm group

1 cm group

Use 3 centimeter grouping for cod, white hake, pollock, cusk, dogfish, angler, barndoor skate, thorny skate, eyed skate, wolffish, and halibut.

Figure 4.6 Example of a completed "Fish" data sheet (pre-1986).



GROUNDFISH FISH SHEET

CRUISE L 14 STN OR STRATUM 45 SET 44 DATE 29 7 79

SUB. DIV. UNIT TYPE OF EXPERIMENT GEAR DEPTH (fm) TEMP AT GEAR

TIME BEGIN 0435 BOTTOM TYPE SPECIES Red fish

TYPE OF SAMPLE S

STOMACH CONTENTS AGING MATERIAL

Fish No.				Wt. gm.	Cond	Total Volume	No. of Spec.	Species	Parts	Species Code		Reading		Remarks	Parasites
685	35	M	R1	725							/				
686	22	F	R1	150							/				
687	25	M	ripe	325							/				
688	24	M	ripe	200							/				
689	22	F	Imm	150							/				
690	36	M1	R2	700							/				
691	28	M1	Imm	375							/				
692	34	F	Rest	450							/				
693	26	F	R2	325							/				
694	32	M0	spent	425							/				

APPENDIX 4.2

Figure 4.1 Revised "Deck" data sheet (post-1985), the reverse side has many of the codes used on the "Station" data sheet.

(see following page)

Figure 4.2 Revised "Station" data sheet (post-1985), the reverse side has many of the common species codes used on Gulf resource surveys.

(see second following page)

Figure 4.3 Revised "Catch" data sheet (post-1985).

(see third following page)

Figure 4.4 Revised "Length" data sheet (post-1985).

(see fourth following page)

Figure 4.5 Revised "Fish" ("Biological") data sheet (post-1985).

(see fifth following page)

Figure 4.6 New form "Bathythermograph / Salinity" data sheet (post-1985).

(see sixth following page)

DECK / PONT

REVISED MAY 1987

CRUISE:
STRATUM:
SET:
DATE:
RECORDER:

NET DAMAGE:

NOTES:

INTERESTING ASPECTS OR PECULIARITIES OF CATCH.

BOTTOM TYPE:

BIASES (eg) DISCARDS BEFORE SAMPLING, ESTIMATES OF FISH CARRIED OVER FROM PREVIOUS TOWS, SUSPICIONS THAT NET NOT FISHING PROPERLY, ETC.

SPECIES	BASKET WEIGHT AND COUNT (TARE BASKET) WEIGHT IN KILOGRAMS										NO'S OF INDIV.	TOTAL	
												WEIGHT	BASKETS

N.B. 1. CIRCLE BASKETS SAMPLED WHEN SUBSAMPLING.
2. DENOTE FRACTIONS AS FOLLOWS: 3/10 OF A BASKET WEIGHING 20Kg 20/3

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```
**********************************SUPPLEMENTARY CODES FOR STATION CARD***************************

*******EXPERIMENT TYPE***************                 *******HOW OBTAINED**********
1 stratified random survey set                        ship speed & distance towed
2 regular survey set (fixed)                          1 ships log
3 unrepresentative catch - net damage                 2 radar buoy
4 part of catch left unsampled                        3 DECCA bearings
5 comparative fishing experiment                      4 LORAN bearings
6 tagging                                             5 DECCA radar
7 mesh selective studies                              6 LORAN radar
8 exploratory fishing                                 7 DECCA and LORAN
9 hydrography                                         8 SATNAV
                                                      9 No observation / hydrographic station

***********GEAR*********************                  *******AUXILLARY EQUIPMENT*******
001 3/4 35 otter trawl                                0 none
002 35 otter trawl                                    1 rollers plus 9mm liner in codend and L-P
003 yankee 36 otter trawl                             2 rollers plus 9mm liner in codend
004 41.5 otter trawl                                  3 no rollers - 9mm liner in codend
005 long line                                         4 no rollers - 5mm liners
006 beam trawl                                        5 covered codend (mesh selection experiment)
007 mid-water trawl
008 Engel highlift (bottom) trawl                     9 No observation
009 western IIA
010 IYGPT (young gadoid trawl)
011 shrimp trawl
012 50' flounder drag

099 gear type not applicable

**********BOTTOM TYPE****************                 *******TIDE/CURRENT DIRECTION******
surficial sediment (Loring & Nota,1973)                1 bow
1 pelite - silt and clay - <0.05mm                     2 starboard
2 sand   - 0.05 to 2.0mm                               3 port
3 sand and gravel                                      4 stern
4 gravel - pebbles, cobbles, boulders - >2.0mm         5 no tide or current
5 glacial drift - distinctive hummocky relief          6 ship circling during set

                                                       9 no observation

**********************************METEOROLOGICAL CODES*******************************************

*******WIND DIRECTION***************                  *******WIND FORCE (Beauford scale)****
0 calm         no wind                                 0 calm             no wind
1 north        338 - 022 deg                           1 light air        01 - 03 knots
2 northeast    023 - 067 deg                           2 light breeze     04 - 06 knots
3 east         068 - 112 deg                           3 gentle breeze    07 - 10 knots
4 southeast    113 - 157 deg                           4 moderate breeze 11 - 16 knots
5 south        158 - 202 deg                           5 fresh breeze     17 - 21 knots
6 southwest    203 - 247 deg                           6 strong breeze    22 - 27 knots
7 west         248 - 292 deg                           7 near gale        28 - 33 knots
8 northwest    293 - 337 deg                           8 gale(and above) 34+     knots
9 No observation                                       9 No observation
```

CARTE STATION CARD

REVISED APRIL 1987

CARD TYPE 5

CRUISE

STA. OR STRATUM

SET

DATE
D D M M Y Y

NAFO

SUB. DIV. UNIT

TYPE OF EXP.

SHIP SPEED .

HOW OBTAINED

GEAR

AUX. EQUIP.

LOG READING

START ________ END ________

DISTANCE TOWED .

HOW OBTAINED

SHIP DIRECTION ________

BAROMETER ________

CLOUDS ________

SEA ________

AIR TEMP. ________

WEATHER ________

SWELL ________

WIND DIRECTION ________

WIND FORCE ________

TIDE AND CURRENT IN RELATION TO SHIP DIRECTION

START

END

TIME LOCAL
H H M M ________
H H M M

TEMPERATURE SURFACE .

TEMPERATURE BOTTOM .

LATITUDE
D D M M ________
D D M M ________

SALINITY BOTTOM

LORAN C ________ ________

LONGITUDE
D D M M ________
D D M M ________

BOTTOM TYPE

LORAN C ________ ________

DEPTH (METERS) ________

LIGHT (SECCHI)

NO. OF INVERT. SPECIES

NO. OF FISH SPECIES

TOTAL WEIGHT OF FISH CATCH (KG)

REMARKS: (ie) NOTE FISH RETURNED TO LAB., UNUSUAL CHARACTERISTICS OF CATCH, DETAILS OF GEAR DAMAGE, ETC.

BRIDGE: ________

RECORDER: ________

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SUPPLEMENTARY SPECIES CODE LIST

FISH SPECIES	CODE	PAGE (SCOTT & SCOTT)
Alligatorfish	0340	514
Angler (Monkfish)	0400	235
Barracudina - unspec.	0713	194
Barracudina - white	0712	194
Butterfish	0701	475
Capelin	0064	145
Cod - Greenland	0118	270
Cunner	0122	398
Dogfish - Atlantic Spiny	0220	35
Dogfish - Black	0221	30
Eelpout - Arctic	0641	410
Eelpout - Vahl's	0647	412
Eelpout - Laval's	0620	408
Fish Doctor	0616	404
Grenadier - Common(Marlinspike)	0410	303
Hagfish	0241	3
Halibut - Atlantic	0030	547
Hake - Silver	0014	278
Hake - Longfin	0112	288
Lanternfish - unspec.	0150	205
Lumpfish - Atlantic	0501	518
Lumpsucker - Atlantic Spiny	0502	521
Lumpsucker - Leatherfin	0509	520
Pollock	0016	286
Pout - Atlantic Soft	0646	414
Rock Gunnel	0621	427
Rockling - Fourbeard	0114	264
Rosefish - Blackbelly	0123	480
Salmon - Atlantic	0065	129
Sand Lance	0610	438
Sculpin - Hookear	0306	490
Sculpin - Mailed	0304	510
Sculpin - Shorthorn	0301	507
Sea Poacher - Atlantic	0350	514
Seasnail - unspec.	0500	523
Seasnail - Atlantic	0503	523
Seasnail - Gelatinous	0505	525
Seasnail - Striped	0504	
Sea Tadpole	0520	517
Shad	0061	109
Shanny - Radiated	0625	424
Shanny - Daubed	0623	420
Silversides	0770	316
Snakeblenny	0622	419
Snakeblenny -Fourline	0626	416
Stickleback - Threespine	0361	338
Tomcod - Atlantic	0017	281
Wolffish - Atlantic	0050	432
Wolffish - Northern	0052	430
Wolffish - Spotted	0051	434
Wrymouth	0630	437

INVERTEBRATE SPECIES	CODE
Amphipod - unspec.	2800
Basket Star - unspec.	6300
Bivalve - unspec.	4300
Brittle Star - unspec.	6200
Buccinum (Welk or Egg Cases)	4211
Chiton - unspec.	4700
Clam - unspec.	4310
Clam - Propeller	4317
Cockle - unspec.	4340
Crab - Hermit	2560
Crab - Jonah	2511
Crab - Northern Stone	2523
Crab - Red	2532
Crab - Rock	2513
Crab - Snow	2526
Crab - Toad	2520
Ctenophore - unspec.	8100
Echinoderm - unspec.	6000
Euphausid - unspec.	2600
Gastropod - unspec.	4200
Jellyfish - unspec.	8500
Mussels - unspec.	4330
Nudibranch - unspec.	4400
Octopus - unspec.	4521
Quahog	4304
Sand Dollard - unspec.	6500
Scallop - unspec.	4320
Scallop - Giant	4321
Scallop - Icelantic	4322
Sea Anemone - unspec.	8300
Sea Cucumber - unspec.	6600
Sea Mouse	3212
Sea Peach	1827
Sea Pen	8318
Sea Urchin - unspec.	6400
Shrimp - Crangon	2416
Shrimp - Pandallid	2210
Shrimp - unspec.	2200
Sponge - unspec.	8600
Squid - Long Finned	4512
Squid - Short Finned	4511
Squid - unspec.	4514
Starfish - Mudstar	6115
Starfish - Sunstar	6120
Starfish - unspec.	6100
Tunicate - unspec.(Ascidian)	1810
Tunicate - (Sea Peach)	1827
Welk - unspec.	4210
*******FLORA & OTHER ITEMS**************	
"unidentified remains"- biological	9000
Stones / Rocks	9200
Algae / Seaweed / Kelp	9300
"foreign articles" - garbage	9400

CATCH / CAPTURE

REVISED NOV. 1985

CARD TYPE 6 CRUISE ☐☐☐☐ STA. OR STRATUM ☐☐☐ SET ☐☐☐ DATE ☐☐☐☐☐☐
D D M M Y Y

RECORDER: ____________

RECORDER:		TOTAL CAUGHT			NO. SAMPLED FOR:							
SPECIES	CODE	WEIGHT KG.	BASKETS	NOS.	LENGTH	WEIGHT	SEX	MATURITY	OTOLITHS	STOMACHS		
COD	0010											
HADDOCK	0011											
WHITE HAKE	0012											
REDFISH	0023											
TURBOT	0031											
PLAICE	0040											
WITCH	0041											
YELLOWTAIL	0042											
WINTER FLOUNDER	0043											
WINDOW PANE (BRILL)	0143											
THORNY SKATE	0201											
SMOOTH SKATE	0202											
WINTER SKATE	0204											
HERRING	0060											
GASPEREAU	0062											
SMELT	0063											
MACKEREL	0070											
LONG-HORN SCULPIN	0300											
SEA RAVEN	0320											
OCEAN POUT	0640											
TOAD CRAB (Hyas sp.)	2520											
SNOW CRAB	2526											
LOBSTER	2550											
SQUID	4511											

NOTES:

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LENGTH / LONGUEUR

REVISED APRIL 1987

CARD TYPE 7

CRUISE

STA. OR STRATUM

SET

DATE D D M M Y Y

SPECIES

BASKETS: CAUGHT SAMPLED

GROUP OF OTOLITHS

LEN. INT. OF FREQUENCY

UNIT cm = 1 mm = 2

WEIGHT: kg

NOS. CAUGHT:			SEX	NOS. CAUGHT:			SEX
NOS. SAMPLED: IN TALLY				NOS. SAMPLED: IN TALLY			
0 .0	0			0 .0	0		
0 .5	1			0 .5	1		
1 .0	2			1 .0	2		
1 .5	3			1 .5	3		
2 .0	4			2 .0	4		
2 .5	5			2 .5	5		
3 .0	6			3 .0	6		
3 .5	7			3 .5	7		
4 .0	8			4 .0	8		
4 .5	9			4 .5	9		
5 .0	0			5 .0	0		
5 .5	1			5 .5	1		
6 .0	2			6 .0	2		
6 .5	3			6 .5	3		
7 .0	4			7 .0	4		
7 .5	5			7 .5	5		
8 .0	6			8 .0	6		
8 .5	7			8 .5	7		
9 .0	8			9 .0	8		
9 .5	9			9 .5	9		
0 .0	0			0 .0	0		
0 .5	1			0 .5	1		
1 .0	2			1 .0	2		
1 .5	3			1 .5	3		
2 .0	4			2 .0	4		
2 .5	5			2 .5	5		
3 .0	6			3 .0	6		
3 .5	7			3 .5	7		
4 .0	8			4 .0	8		
4 .5	9			4 .5	9		
5 .0	0			5 .0	0		
5 .5	1			5 .5	1		
6 .0	2			6 .0	2		
6 .5	3			6 .5	3		
7 .0	4			7 .0	4		
7 .5	5			7 .5	5		
8 .0	6			8 .0	6		
8 .5	7			8 .5	7		
9 .0	8			9 .0	8		
9 .5	9			9 .5	9		

NOTES

RECORDER :

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FISH / POISSON

REVISED APRIL 1987

CARD TYPE 8

CRUISE

STA. OR STRATUM

SET

DATE D D M M Y Y

SAMPLER

RECORDER

TYPE OF SAMPLE TOT, RAN, STRAT

SPECIES

FIELD DEFINITION

BLANK DEFAULTS TO HEADINGS ON FORM

FISH NO.	LGTH.	TOTAL WEIGHT	SEX	MAT.	AGING MATERIAL				STOMACH			NOTES			GONAD WEIGHT
					AGE	TYPE	READING	YEAR CLASS	TYPE	FULL	WEIGHT				

NOTES:

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(CODES for FIELD DEFINITION on biological data card

	FIELD /cols	HEADING (on data form)	ORIGINAL VALUE (pre 1985)	CODE	PARAMETER
1.	42-42	Stomach type	Stomach content	0	Stomach content
				1	Stomach type
				2	Tagging character
2.	48-49	Stomach full	No. spec in stom.	0	No species in stomach
				1	Stomach full (1/4,2/4,etc)
				2	Standard length
				3	Stomach weight - empty
3.	43-47	Stomach weight	Stomach volume	0	Stomach volume
				1	Stomach weight - full
				2	Fish weight (2nd reading)
				3	Girth
				4	Tag number
4.	50-51	..blank	Stomach part	0	Stomach part
				1	Standard length
5.	68-70	..blank	Parasite	0	Parasite
				1	Liver weight
6.	52-55	Gonad weight	Stom spec code	0	Stomach spec code
				1	Gonad weight

end of codes)

These are a complete list of codes used until January 1989.

BATHYTHERMOGRAPH / SALINITY

REVISED NOV 1980

CARD TYPE 9

CRUISE

STA. OR STRATUM

SET

DATE D D M M Y Y

LATITUDE ______ D D M M

TIME H H M M

BT SERIAL #

LONGITUDE ______ D D M M

DEPTH (M)

BT RANGE (MAX)

TEMPERATURE: SURFACE

BOTTOM @ ______ M.

TYPE BT=0/SAL=1

DEPTH INT.

DEPTH (M)			TEMP/SAL
	0	00	
	1	05	
	2	10	
	3	15	
	4	20	
	5	25	
	6	30	
	7	35	
	8	40	
	9	45	
	0	50	
	1	55	
	2	60	
	3	65	
	4	70	
	5	75	
	6	80	
	7	85	
	8	90	
	9	95	
	0	00	
	1	05	
	2	10	
	3	15	
	4	20	
	5	25	
	6	30	
	7	35	
	8	40	
	9	45	
	0	50	
	1	55	
	2	60	
	3	65	
	4	70	
	5	75	
	6	80	
	7	85	
	8	90	
	9	95	

NOTES

RECORDER

READER

DEPTH (M)			TEMP/SAL
	0	00	
	1	05	
	2	10	
	3	15	
	4	20	
	5	25	
	6	30	
	7	35	
	8	40	
	9	45	
	0	50	
	1	55	
	2	60	
	3	65	
	4	70	
	5	75	
	6	80	
	7	85	
	8	90	
	9	95	
	0	00	
	1	05	
	2	10	
	3	15	
	4	20	
	5	25	
	6	30	
	7	35	
	8	40	
	9	45	
	0	50	
	1	55	
	2	60	
	3	65	
	4	70	
	5	75	
	6	80	
	7	85	
	8	90	
	9	95	

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APPENDIX 4.3

GLOSSARY FOR VARIABLES ON DATA RECORDING SHEETS

AGE - The number of years a specimen lived.

AGER - The person who determined the age of a specimen.

AGE MATERIAL - Material (body parts) collected from a specimen to determine age.

AUXILIARY EQUIPMENT - Equipment used in addition to that specified in gear type.

BASKETS CAUGHT - Count of baskets (to the nearest tenth) of a species caught during a set.

BOTTOM DEPTH - The calculated average of the beginning and end depths in meters recorded during a tow. Prior to 1985 the average of maximum and minimum depths in fathoms.

BOTTOM SALINITY - The measure of the salinity of a sample of water from the bottom collected at the survey station, to the nearest tenth of a part per thousand. Not used since 1983.

BOTTOM TEMPERATURE - The measure of the bottom water temperature at the survey station, to the nearest tenth of a degree Celsius.

BOTTOM TYPE - The sediment type of the ocean bottom at the station surveyed as taken from the chart of Loring and Nota (1973).

BT SLIDE NUMBER - The bathythermograph slide number, which was assigned consecutively within a cruise by the hydrographic technician. No longer used, since 1983 is equal set number.

CHECK MARK - A noticeable figure sometimes found in any age material which either indicate certain incidents that happened in the specimen's lifetime or is an effect of the storage chemical used.

CRUISE - The coded value made up as a composite of the vessel code and the cruise number.

CRUISE NUMBER - A number which uniquely identifies a cruise for each vessel code.

CURRENT - The observation made at the time of set, of the direction of the tide or current against the ship.

DATE - Date of beginning of sample (set) (usually day, month, year - 2 digits).

DEPTH AT GEAR - A measure of the average depth in meters at which the gear was towed during a set Prior to 1985 depth in fathoms.

DEPTH RANGE - A calculated difference of the beginning and end bottom depths in meters recorded at a survey station. Prior to 1985 the difference between maximum and minimum depths in fathoms.

DISTANCE OF TOW - The distance travelled to the nearest tenth of a nautical mile by the vessel during the set.

DURATION OF SET - The measure of the time in minutes from the time beginning to the end of tow.

EDGE TYPE - A description of the outer edge of a cross section of a sample of age material.

ENDING POSITION - The location in degrees and minutes of the position of the end of the survey station. All latitudes are north and all longitudes are west.

EXPERIMENT TYPE - Describes the nature of the set.

FISH NUMBER - Identification number for specimens which are examined in detail (unique for each species on a cruise).

GEAR TYPE - The code for the fishing gear used for the set.

GROUPING - The size in centimetres of the length interval that each length group count represents.

HOW DISTANCE OBTAINED - Indicates how the value in the distance of tow field was obtained.

HOW SHIP SPEED OBTAINED - Indicates how the value in the ship speed field was obtained.

HYDROGRAPHIC STATION NUMBER - A value that was assigned consecutively within a cruise by the hydrotechnician at a station where a hydrographic observation was done. No longer used, since 1983 is equal to set number.

LENGTH - The measured length of a specimen in centimetres.

LENGTH GROUP COUNT - The number of specimens sampled, from a sex group of a species for a set, which have lengths within the length group.

MATURITY STAGE - The maturity stage of a specimen (see Section III).

NUMBER CAUGHT - The count or estimated total number of specimens of a species which were caught in a set.

NUMBER OF FISH SPECIES - The number of different fish species caught in a set.

NUMBER OF ANNULI - The number of annuli or rings found while examining a cross section of the age material.

NUMBER OF SPECIES - The number of different prey species found in the specimen's stomach, including species other than fish and invertebrates.

NUMBER OF INVERTEBRATE SPECIES - The number of different invertebrate species caught in a set.

NUMBER SAMPLED FOR AGEING MATERIAL - The number of specimens of a species from which material used for determining age was extracted in a set.

NUMBER SAMPLED FOR LENGTH - The number of specimens in a set of a species that were measured for length.

NUMBER SAMPLED FOR MATURITY - The number of specimens of a species that had their maturity stage determined in a set.

NUMBER SAMPLED FOR PARASITES - The number of specimens of a species which were examined for parasite incidence in a set.

NUMBER SAMPLED FOR SEX - The number of specimens of a species for which sex determination was attempted in a set.

NUMBER SAMPLED FOR STOMACH CONTENT - The number of specimens of a species that had their stomach examined in a set.

NUMBER SAMPLED FOR WEIGHT - The number of specimens of a species which were weighed in a set.

PARASITES - The observed parasite status of a specimen (see Section IV).

PARTS - The estimated portion, in parts of ten, of the TOTAL VOLUME made up by the species OR OBJECT IN STOMACH entry on this biological record.

RATIO - The percentage of the total set catch of a species which was sampled (only recorded to 2 significant digits).

RECORD NUMBER (LEN) - Sequential identifier for the "Length Frequency" data sheet for each sex group within a species.

RECORD NUMBER (BIO) - Sequential identifier for the "Biological" data sheet record when there are multiple records for the same specimen.

RECORD TYPE - Identifier for the record type.

SALINITY AT GEAR - A measure of salinity to the nearest tenth of a part per thousand. Not used since 1985.

SET NUMBER - A unique alphanumeric identifier for each set in a cruise.

SEX (LEN) - The code representing the gender of the specimens in the length frequency that this record represents, or the location where sexed information is stored.

SEX (BIO) - The code representing the observed gender of an individual specimen.

SHIP SPEED - The calculated vessel's speed during the tow in nautical miles per hour (knots) measured to the nearest tenth.

SPECIES - The species of the catch of a SET that the information contained on this record pertains to.

SPECIES OR OBJECT IN STOMACH - One of the number of species found while examining the stomach contents of this specimen.

STARTING POSITION - The location in degrees and minutes of the position of the start of the survey station. All latitudes are north and all longitudes are west.

STARTING LENGTH GROUP - The length group that the first Length Group Count field of this "Length Frequency" data sheet represents.

STATION DATE - The date at the TIME BEGINNING of the set (see DATE).

STATISTICAL AREA - The Canadian fisheries statistical unit area in which the station is located. See Appendix I - Maps of the Survey Area.

STOMACH CONDITION - A code which describes the physical state of the stomach of the specimen represented by Fish Number and Species.

STRATUM - The stratum in which the surveyed station lies.

SURFACE TEMPERATURE - A measure of the surface water temperature at the survey station, to the nearest tenth of a degree Celsius.

TEMPERATURE AT GEAR - A measure to the nearest tenth of a degree Celsius of the water temperature at the depth specified in DEPTH AT GEAR.

TIME BEGINNING - Reading on the 24 hour clock (local time) when the set tow is begun or when the hydrographic observation is made.

TOTAL VOLUME - The observed volume of the stomach contents measured in cubic centimetres to one decimal place.

TOTAL WEIGHT OF FISH CAUGHT - The weight, to the nearest kilogram, of all fish caught during the set.

UNIT AREA - see STATISTICAL AREA.

VESSEL CODE - An identifier of the vessel used for the cruise (not necessarily unique, ie. N - Navicula, Needler).

WEIGHT - The weight in grams of a specimen.

WEIGHT CAUGHT - The total weight in kilograms of the species caught during the set, to the nearest kg if over 1 kg and to the nearest 0.1 if less than 1 kg. Prior to 1986 if weight was less than 0.5 a zero was recorded.

WEIGHT CALCULATED INDICATOR - Indicate if the value in the Weight Caught field is an observed reading or a weight that was calculated using a computer program.

WEIGHT SAMPLED - The weight, in kilograms, of that portion of the catch of a species sampled for the set.

WIND DIRECTION - The code for the direction that the wind (if any) was blowing at the time the station was surveyed.

WIND FORCE - The code for the wind condition at the time the station is surveyed as judged by the appearance of the sea or by wind velocity measured in knots.

YEAR CLASS - The year in which the specimen was born.

V. HYDROGRAPHY

A. General

At the beginning of a cruise, each member of the watch should be supplied with a small scale chart showing the proposed cruise track and the types of hydrographic observations required at each station. A master chart is located in the bridge. **The hydrographic technician is responsible for following the progress of the cruise and making the appropriate observations at each station in consultation with bridge personnel.**

Prior to 1983 at every station on resource surveys, minimum hydrographic observations consisted of a BT cast, collection of surface and bottom water samples for salinity measurement, and separate surface and bottom temperature observations (Nansen bottles). At a number of selected stations, a full series of hydrographic observations were made. In addition to a BT cast, temperature readings and water samples were taken at the surface, 10 metres, 20 m, 30 m, 50 m, 75 m, 100 m, 150 m, 200 m, 250 m, etc., and always at bottom.

Since 1983 a BT cast with separate surface temperature is recorded at every station during a survey. No salinity or water samples have been taken since 1983.

It is essential that hydrographic observations associated with trawl sets be made within the depth range of the trawl set, preferably close to the mean depth of the tow. Because of this, hydrographic observations must be made after, not before, trawl sets. If the vessel has been reversing engines to assist in the haul back it may be necessary to move several hundred meters back along the tow path to move out of the zone of 'mixed' water.

Wire angle must be recorded and compensated for with an MBT cast. Tables are provided on the reverse side of the Marine Environmental Data Service (MEDS) "Bathythermograph" data sheet to allow the hydrographic technician to release the correct amount of cable.

Prior to 1983, a poor correspondence was occasionally obtained when bottom temperature observations from water bottles were compared with bottom temperatures obtained from bathythermographs. **Lack of wire angle records on hydrographic logs suggests that wire angle was not normally measured or compensated for.** It is likely that water bottle samples were frequently taken at depths shallower than that recorded, resulting in erroneous observations of both temperature and salinity. **It is essential that wire angle be measured, recorded, and compensated for when sampling at depth.**

B. Data Sheets

Prior to 1983, five different data sheets were used for recording hydrographic data. Four of these were provided by the Marine Environmental Data Service (MEDS), Department of Fisheries and Oceans, Ottawa, and were kept in the hydrographic lab. The fifth was the "Station and Set" data sheet upon which the hydrographic station number, BT slide number and surface and bottom temperature were recorded.

Since 1983, hydrographic observations during resource surveys of the southern Gulf of St. Lawrence have been limited to surface temperature ("bucket thermometer") and surface-to-bottom temperature profiles obtained with bathythermographs (MBT, XBT, or NXBT). When the data recording sheets were revised in 1985 a "Bathythermograph/Salinity" data sheet (Appendix 4.2 Figure 4.6) was introduced for recording data from temperature or salinity profiles.

It is important to note that sets, BT slides and hydrographic stations were all numbered independently and consecutively from 1 upwards prior to 1983. XBT casts are numbered in the same manner as MBT's and are treated the same in every way except that "XBT" is entered in columns 30-34 on the MEDS "Bathythermograph Data Summary" data sheet (Appendix 5.1 Figure 5.1).

Note:

When weather observations are recorded on the MEDS forms, the codes found on the "MEDS Bathythermograph Coding Tables" (Appendix 5.2) are to be used.

Detailed instructions on how to record hydrographic observations are provided with the MEDS manuals (see Appendix 5.2). This information is summarized below:

1. "MEDS Bathythermograph Data Summary" data sheet (Appendix 5.1 Figure 5.1)

These data sheets are filled out whenever a mechanical (BT or MBT) or expendable (XBT) **bathythermograph is used. A surface temperature** reading using a bucket thermometer is **always** taken and prior to 1983 a surface water sample was **always** collected in conjunction with BT and XBT measurements. One line is used on this form per cast of the bathythermograph.

2. "MEDS Data Summary" data sheet (Appendix 5.1 Figure 5.2)

Used at locations where **only** surface temperature, water sample, and MBT casts were made (ie. non-fishing stations). This may occur on plankton cruises but seldom on resource surveys. One sheet is used per station or sampling location.

3. "MEDS Deck Sheet" data sheet (Appendix 5.1 Figure 5.3a and 5.3b)

Used for hydrographic stations where bottle casts are required (generally prior to 1983). Examples are given for a "surface and bottom" observation and a single cast "full hydro" station. If the station cannot be completed with one cast due to a shortage of water bottles, two or more casts may be required. Note that one sheet must be filled out for each cast.

4. "MEDS Bridge Log" data sheet (Appendix 5.1 Figure 5.4)

These must be used in conjunction with the "MEDS Deck Sheet" data sheets because information on station location, etc., not provided on the "MEDS Deck Sheet" data sheets is entered on them, one line per station.

5. "Bathythermograph/Salinity" data sheet (Appendix 4.2 Figure 4.6)

These data sheets are generally completed after the cruise when the MBT slides or XBT graphs are interpreted. One "Bathythermograph/Salinity" data sheet is used per cast of the bathythermograph (ie. per slide or graph). All of the information for the header of this data sheet is obtained from the "MEDS Bathythermograph Data Summary" data sheet.

Note:

As with the fish sampling sheets, care must be taken in filling out these forms accurately. The quality of the information recorded on them will to a large degree determine the quality of subsequent analyses. These data are sent to MEDS in Ottawa where it is keypunched and subjected to a number of editing programs. **MEDS staff are usually not familiar with our research cruises and thus if the data are not recorded** on the sheets **exactly** as shown in the examples, it cannot be keypunched and must be returned to the source for correction. Mistakes in the data itself, such as station coordinates, times, etc. may (if we are lucky) show up as errors in the editing programs. Careful data entry on board the ship can prevent loss of time in obtaining a final hydrographic data report for each cruise. The data in its final form is stored with MEDS in Ottawa in their master data base where it becomes available to anyone interested in this data. Thus, our data may eventually become important in oceanographic studies conducted by other agencies and other disciplines.

Time:

Prior to 1983 Greenwich Mean Time was used with all hydrographic data sheets. In our area:
GMT = local time + 3 (daylight saving time)
GMT = local time + 4 (standard time - winter)
the change occurs at 0200 hrs on the last Sunday of April and October.

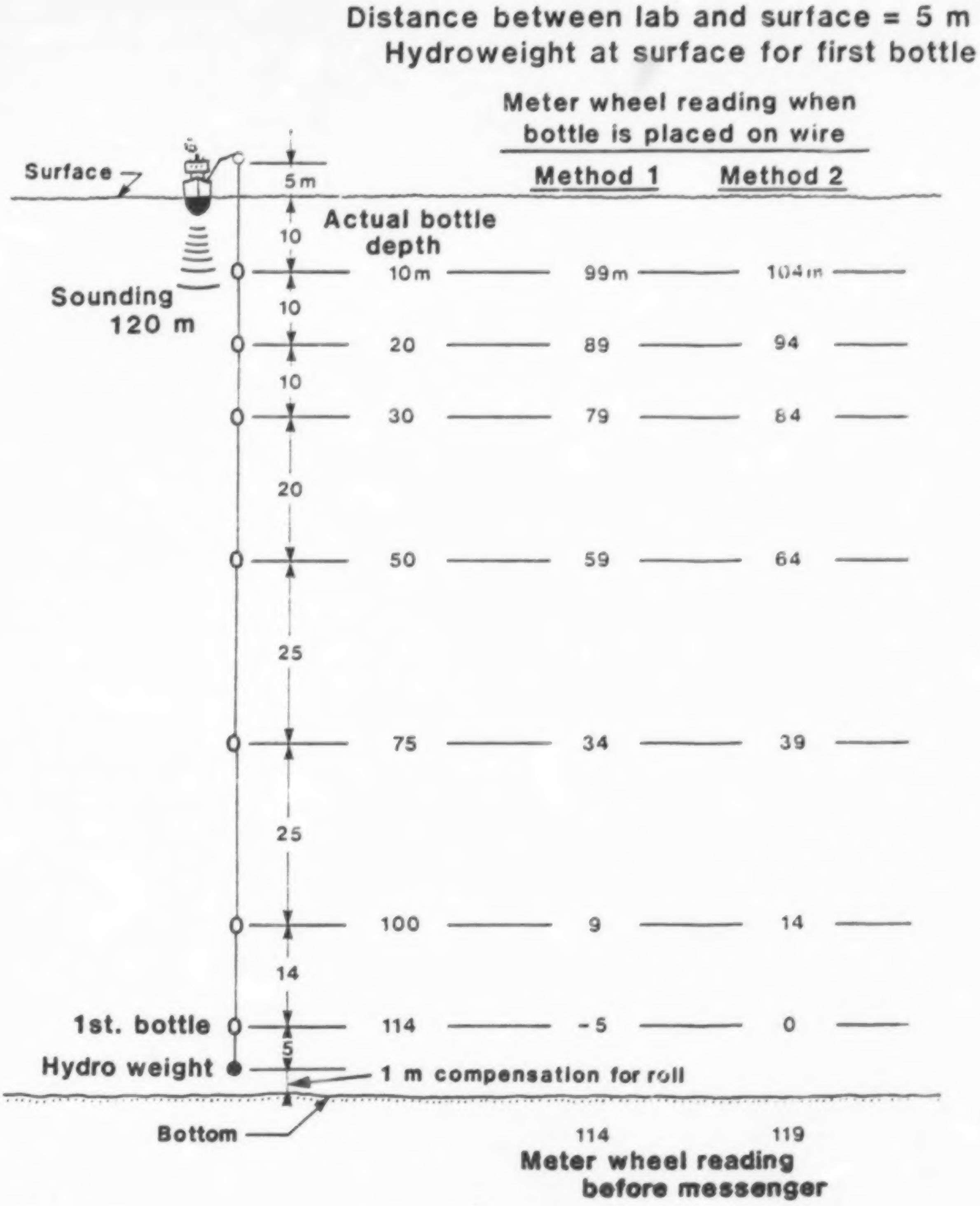
Since 1983 we have used local time for all data collection.

C. Hydrographic Procedures

A full bottle cast involves a rather complicated series of procedures and observations. A number of variations in the procedures can be used depending on individual preference, research vessel, etc. but the end result should be the same:- accurate observations from the correct depths. Commonly, when the first bottle (the deepest of the cast) is clamped on the wire, the weight is just below the surface of the water. This prevents the weight from crashing against the hull. The distance between the weight and the hydrolab and the distance between the surface and the hydrolab (in the example below, both distances are the same) must be known and compensated for to sample the correct depths (Figure 5.1 and Appendix 5.1 Figures 5.3a and 5.3b).

	Example (meters)
A = sounding depth	120
B = distance between hydrolab and surface	5
C = distance between hydrolab and weight	5
D = compensation for roll of ship & swell (varies depending on weather)	1
1. set meter wheel to -B	-5
2. attach first bottle	
3. attach other bottles at correct depths	
4. lower "mass" to A-(C+D)	114

Figure 5.1 Example of a "full hydrocast" (after Koeller, MS 1981).


Distance between lab and surface = 5 m
Hydroweight at surface for first bottle
Meter wheel reading when bottle is placed on wire
Method 1
Method 2
Surface
5m
Actual bottle depth
Sounding 120 m
10
10m
99m
104m
10
20
89
94
10
30
79
84
20
50
59
64
25
75
34
39
25
100
9
14
14
1st. bottle
114
-5
0
5
Hydro weight
1 m compensation for roll
Bottom
114
119
Meter wheel reading before messenger

Alternatively, the meter wheel can read 0 when the first bottle is attached. If this is done, the 'mess' must be lowered until the wheel reads (A+B)-(C+D) = 119 in the example. In the first method, the final reading of the meter wheel is the same as the depth of the deepest bottle. In the second method, the final reading of the wheel is B (in this case 5) more than the actual depth of the deepest bottle. Note that the examples in Appendix 5.1 Figures 5.3a and 5.3b use the second method and that no compensation for roll and swell is made.

After each bottle is attached, the winch operator should be told clearly how much wire should be let out and what the meter wheel reading will be when the desired depth is reached (ie."twenty-five more, to forty-five"). The winch operator should repeat the instructions.

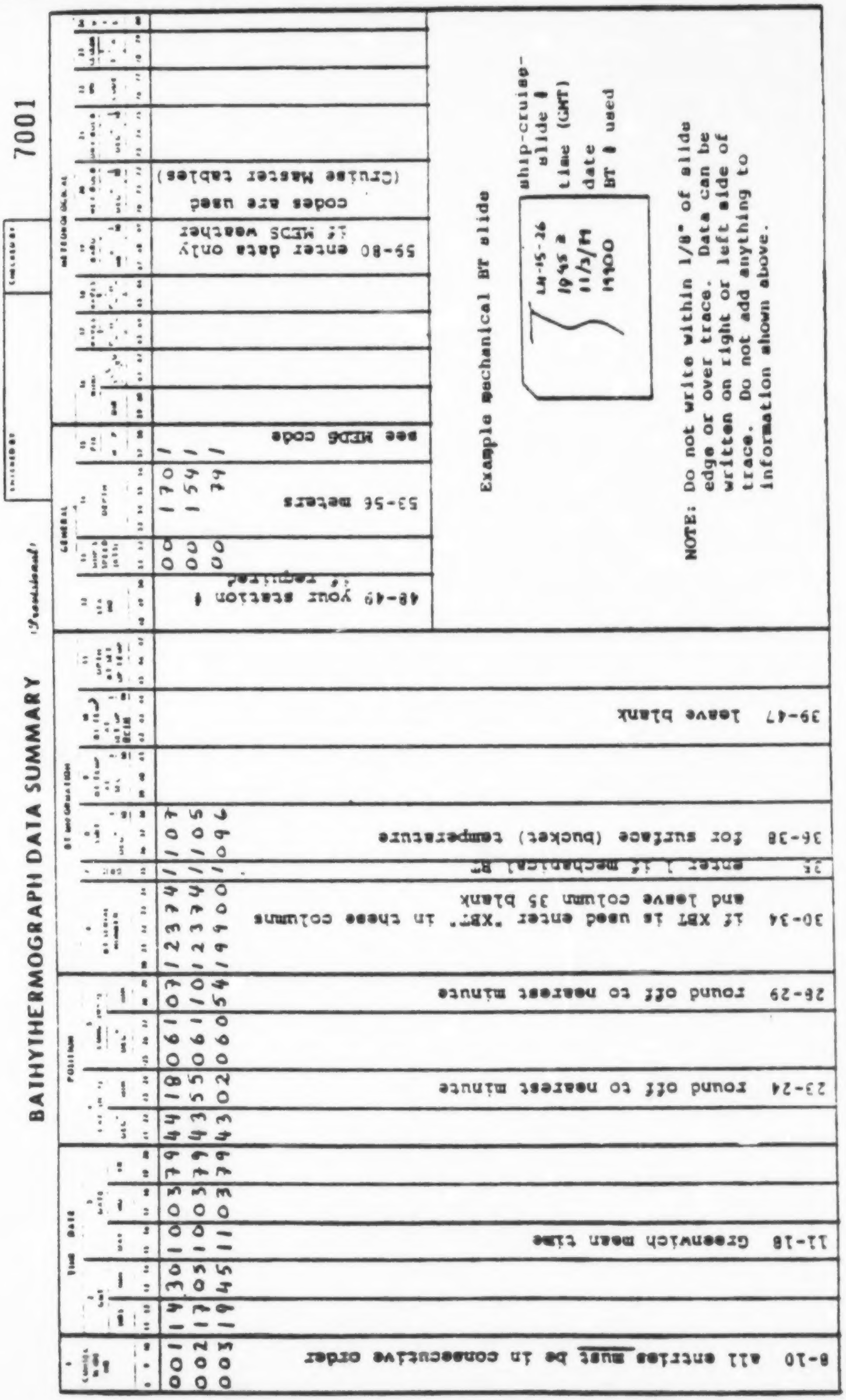
After all is down, the string must be left in place for at least 6 minutes (to allow the thermometers to reach ambient temperature) before the messenger is sent. When the bottles are all back, reading the thermometers should not begin until all the auxiliary thermometers read approximately the same. Normally, this will take 15-20 minutes.

No one should attempt a bottle cast for the first time without supervision. The above instructions only summarize some procedures which, if not done carefully, will lead to errors and inaccuracies. Complete instructions are given in the "Instruction Manual for Oceanographic Observations" published by the U.S. Hydrographic Office.

The surface water sample (bucket) should be obtained at the same time that the BT is being lowered. Surface temperature should be measured **immediately** upon retrieval of the bucket.

APPENDIX 5.1

Figure 5.1 "MEDS Bathythermograph Data Summary" data sheet (after Koeller, MS 1981).



BATHYTHERMOGRAPH DATA SUMMARY (Provisional)

7001

001	14 30	10 03 79	44 18	061 07	12374	1	107	00	170	1
002	17 05	10 03 79	43 55	061 10	12374	1	105	00	154	1
003	19 45	11 03 79	43 02	060 54	19900	1	096	00	74	1

8-10 all entries must be in consecutive order

11-18 Greenwich mean time

23-24 round off to nearest minute

28-29 round off to nearest minute

30-34 if XBT is used enter "XBT" in these columns and leave column 35 blank

35 enter 1 if mechanical BT

36-38 for surface (bucket) temperature

39-47 leave blank

48-49 your station # if required

53-56 meters

see MEDS code

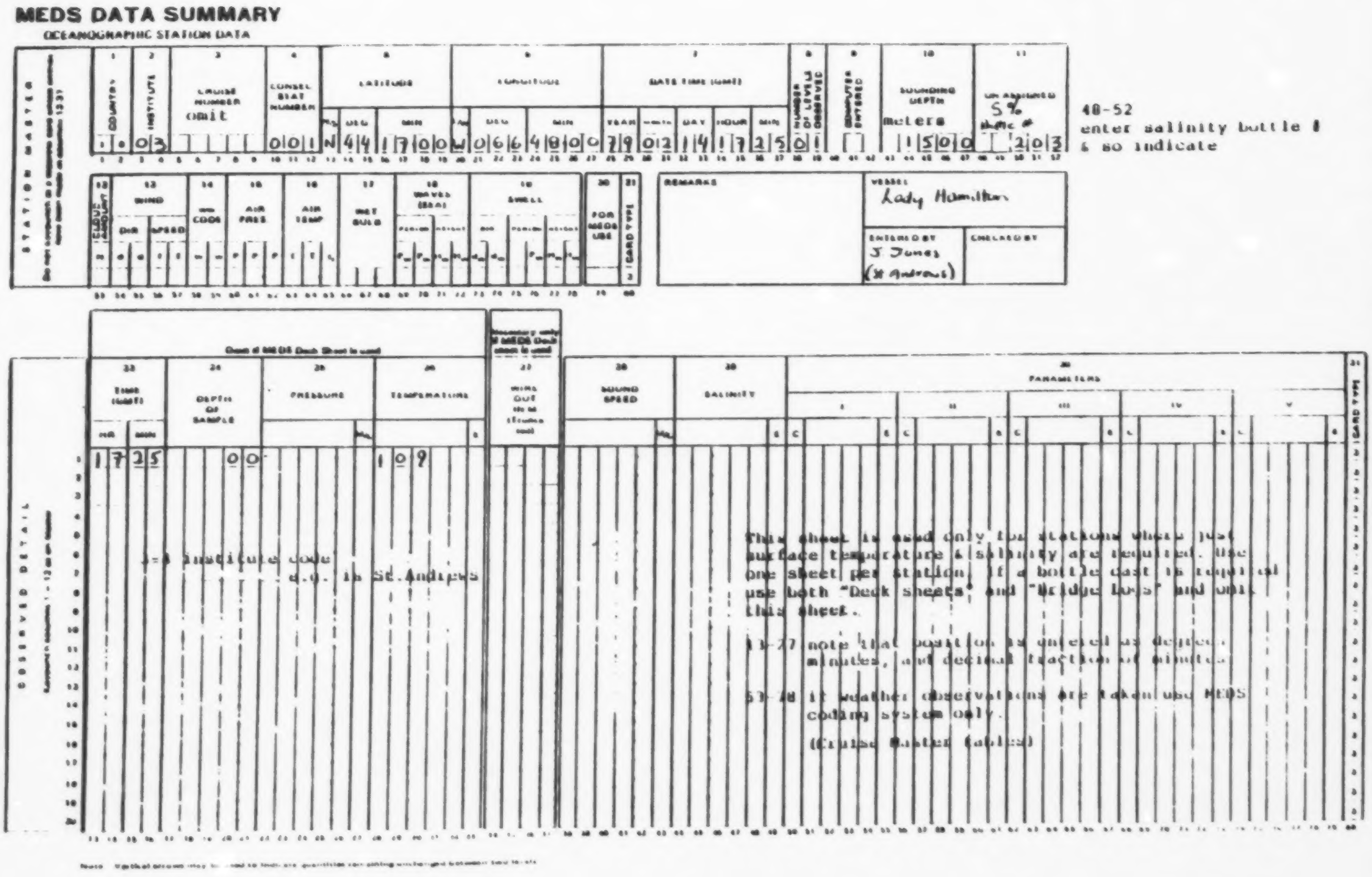
59-80 enter data only if MEDS weather codes are used (Cruise Master tables)

Example mechanical BT slide

LH-15-26 — ship-cruise-slide #
1945 z — time (GMT)
11/3/79 — date
19900 — BT # used

NOTE: Do not write within 1/8" of slide edge or over trace. Data can be written on right or left side of trace. Do not add anything to information shown above.

Figure 5.2 "MEDS Data Summary" data sheet (after Koeller, MS 1981).



MEDS DATA SUMMARY

OCEANOGRAPHIC STATION DATA

STATION MASTER

1 COUNTRY	2 INSTITUTE	3 CRUISE NUMBER	4 CONSEC STAT NUMBER	5 LATITUDE	6 LONGITUDE	7 DATE TIME (GMT)	8 NUMBER OF LEVELS OBSERVED	9 COMPUTER ENTERED	10 SOUNDING DEPTH	11 UNASSIGNED
	03	omit	001	N 44 17.00	W 066 48.00	79 02 14 17 25	01		meters 1500	5‰ bottle # 203

48-52
enter salinity bottle #
& so indicate

REMARKS

VESSEL Lady Hamilton

ENTERED BY J. Jones (St Andrews)

CHECKED BY

OBSERVED DETAIL

23 TIME (GMT) HR MIN	24 DEPTH OF SAMPLE	25 PRESSURE	26 TEMPERATURE
17 25	00		109

3-4 Institute code
e.g. in St. Andrews

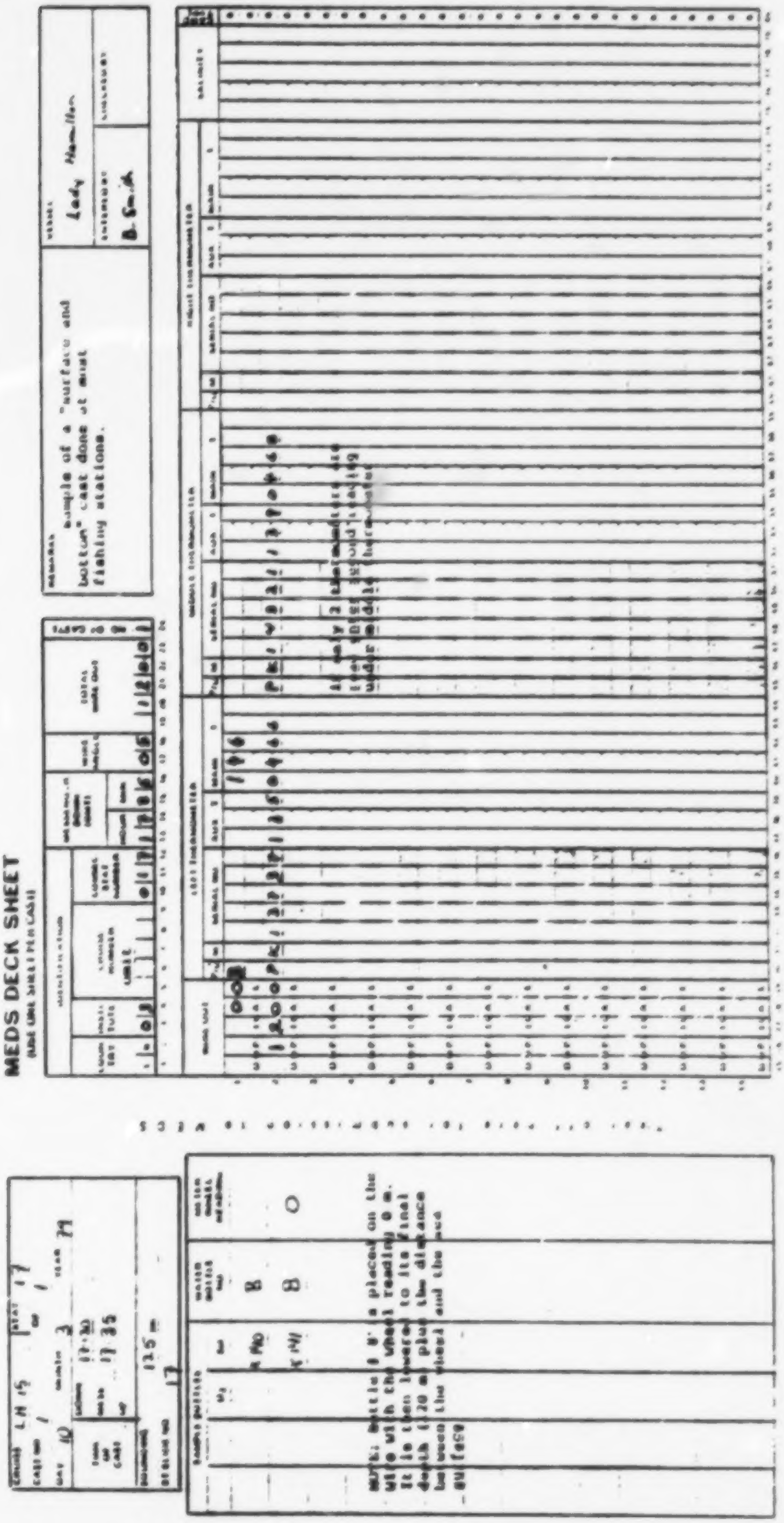
This sheet is used only for stations where just surface temperature & salinity are required. Use one sheet per station. If a bottle cast is required use both "Deck sheets" and "Bridge logs" and omit this sheet.

13-27 note that position is entered as degrees, minutes, and decimal fraction of minutes.

53-78 if weather observations are taken use MEDS coding system only.

(Cruise Master tables)

Figure 5.3a "MEDS Deck Sheet" data sheet (after Koeller, MS 1981).



MEDS DECK SHEET

(USE ONE SHEET PER CAST)

LH 15

17

1

1

10

3

79

17:30

17:35

125 m

17

Sample of a "surface and bottom" cast done at most fishing stations.

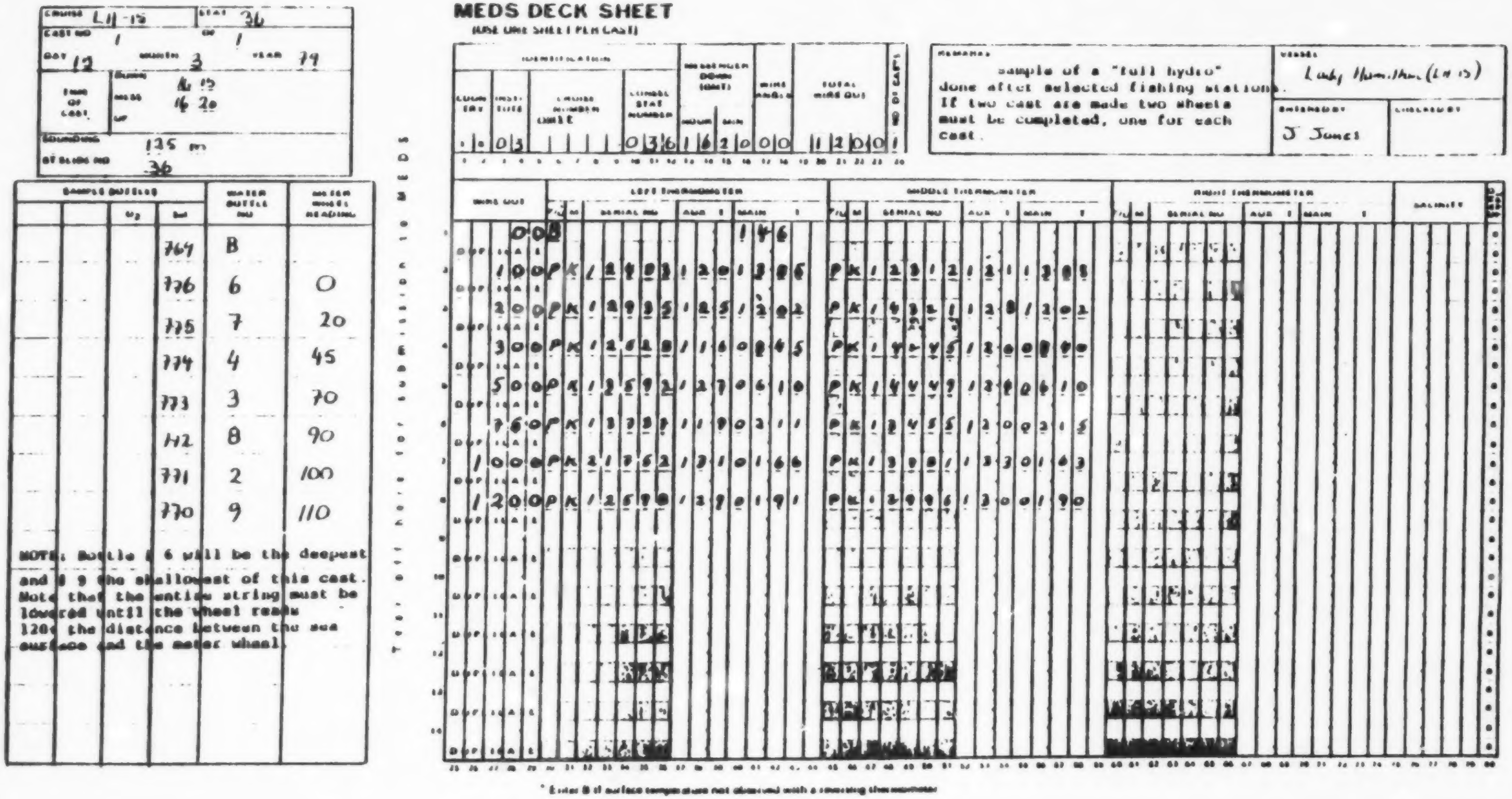
Lady Hamilton

B. Smith

NOTE: Bottle # 8' is placed on the wire with the wheel reading 0 m. It is then lowered to its final depth (120 m) plus the distance between the wheel and the sea surface

If only 2 thermometers are used enter second reading under middle thermometer

Figure 5.3b "MEDS Deck Sheet" data sheet (continued) (after Koeller, MS 1981).



CRUISE LH-15 STAT 36
CAST NO 1 OF 1
DAY 12 MONTH 3 YEAR 79
TIME OF CAST 16 15
16 20
SOUNDING 135 m
36

				WATER BOTTLE NO	METER WHEEL READING
			764	B	
			776	6	0
			775	7	20
			774	4	45
			773	3	70
			142	8	90
			771	2	100
			770	9	110

NOTE: Bottle # 6 will be the deepest and # 9 the shallowest of this cast. Note that the entire string must be lowered until the wheel reads 120, the distance between the sea surface and the meter wheel.

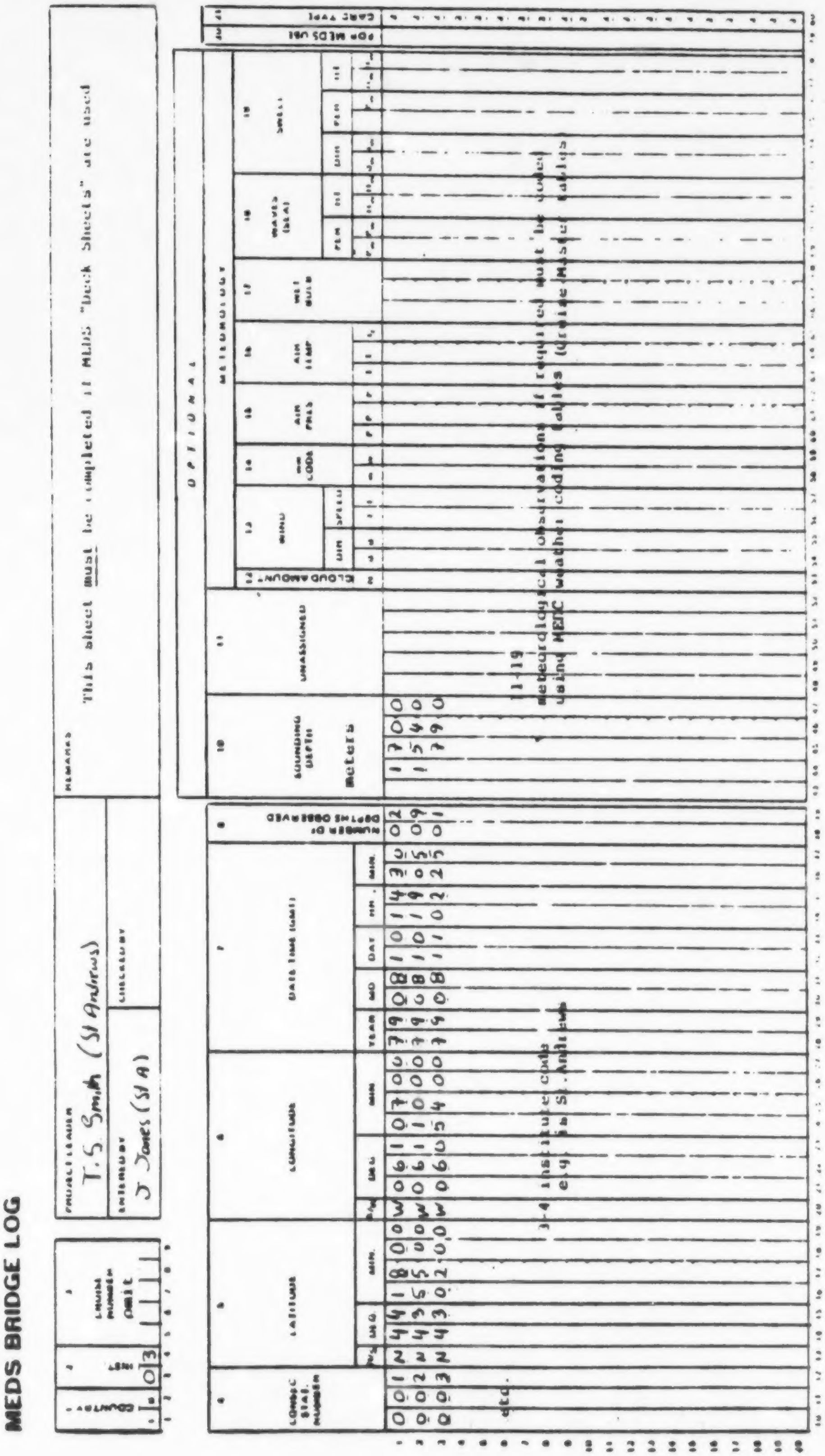
MEDS DECK SHEET
(USE ONE SHEET PER CAST)

REMARKS: sample of a "full hydro" done after selected fishing stations. If two cast are made two sheets must be completed, one for each cast.

VESSEL: Lady Hamilton (LH 15)

ENTERED BY: J Jones

Figure 5.4 "MEDS Bridge Log" data sheet (after Koeller, MS 1981).



MEDS BRIDGE LOG

1 COUNTRY	2 INST	3 CRUISE NUMBER
	03	omit

PROJECT LEADER T.S. Smith (St Andrews)

ENTERED BY J Jones (St A)

CHECKED BY

REMARKS This sheet must be completed if MEDS "Deck Sheets" are used

4 CONSEC STAT. NUMBER	5 LATITUDE N/S	DEG.	MIN.	6 LONGITUDE E/W	DEG	MIN	7 DATE TIME (GMT) YEAR	MO	DAY	HR.	MIN.	8 NUMBER OF DEPTHS OBSERVED	10 SOUNDING DEPTH meters	11 UNASSIGNED	12 CLOUD AMOUNT	13 WIND DIR	SPEED	14 WW CODE	15 AIR PRESS	16 AIR TEMP	17 WET BULB	18 WAVES (SEA) PER	HT	19 SWELL DIR	PER	HT	20 FOR MEDS USE	21 CARD TYPE
001	N	44	1800	W	061	0700	79	08	10	14	30	02	1700															
002	N	43	5500	W	061	1000	79	08	10	19	05	09	1540															
003	N	43	0200	W	060	5400	79	08	11	02	25	01	790															
etc.																												

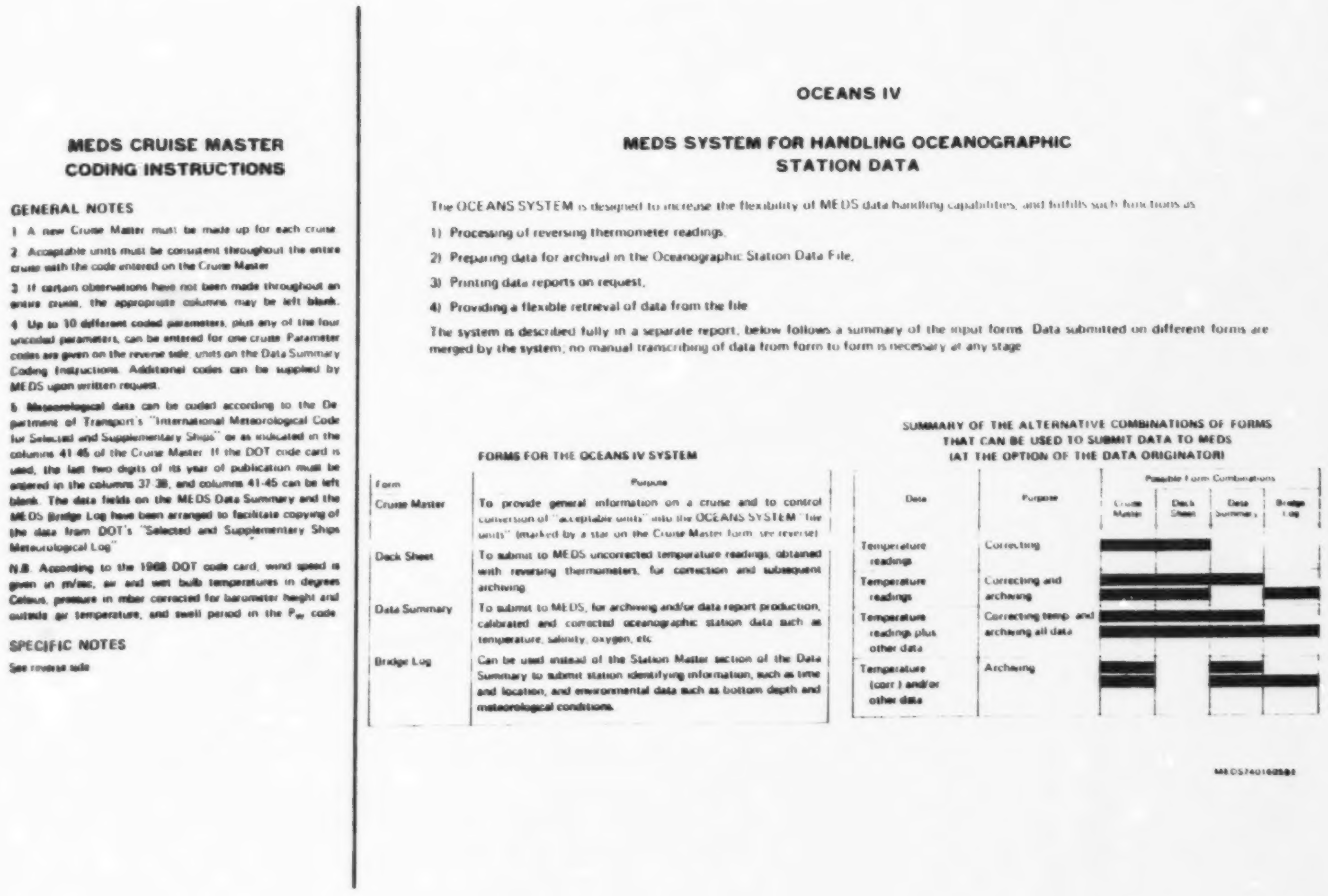
OPTIONAL (10–19); METEOROLOGY (12–19)

3-4 institute code e.g. 56 St. Andrews

11-19 meteorological observations if required must be coded using MEDC weather coding tables (Cruise Master tables)

APPENDIX 5.2

Figure 5.1 MEDS Cruise Master Coding Instructions.



MEDS CRUISE MASTER CODING INSTRUCTIONS

GENERAL NOTES

1 A new Cruise Master must be made up for each cruise.

2 Acceptable units must be consistent throughout the entire cruise with the code entered on the Cruise Master.

3 If certain observations have not been made throughout an entire cruise, the appropriate columns may be left blank.

4 Up to 10 different coded parameters, plus any of the four uncoded parameters, can be entered for one cruise. Parameter codes are given on the reverse side, units on the Data Summary Coding Instructions. Additional codes can be supplied by MEDS upon written request.

5 Meteorological data can be coded according to the Department of Transport's "International Meteorological Code for Selected and Supplementary Ships" or as indicated in the columns 41-45 of the Cruise Master. If the DOT code card is used, the last two digits of its year of publication must be entered in the columns 37-38, and columns 41-45 can be left blank. The data fields on the MEDS Data Summary and the MEDS Bridge Log have been arranged to facilitate copying of the data from DOT's "Selected and Supplementary Ships Meteorological Log".

N.B. According to the 1968 DOT code card, wind speed is given in m/sec, air and wet bulb temperatures in degrees Celsius, pressure in mbar corrected for barometer height and outside air temperature, and swell period in the P_w code.

SPECIFIC NOTES

See reverse side

OCEANS IV

MEDS SYSTEM FOR HANDLING OCEANOGRAPHIC STATION DATA

The OCEANS SYSTEM is designed to increase the flexibility of MEDS data handling capabilities, and fulfills such functions as

1) Processing of reversing thermometer readings,

2) Preparing data for archival in the Oceanographic Station Data File,

3) Printing data reports on request,

4) Providing a flexible retrieval of data from the file.

The system is described fully in a separate report, below follows a summary of the input forms. Data submitted on different forms are merged by the system; no manual transcribing of data from form to form is necessary at any stage.

FORMS FOR THE OCEANS IV SYSTEM

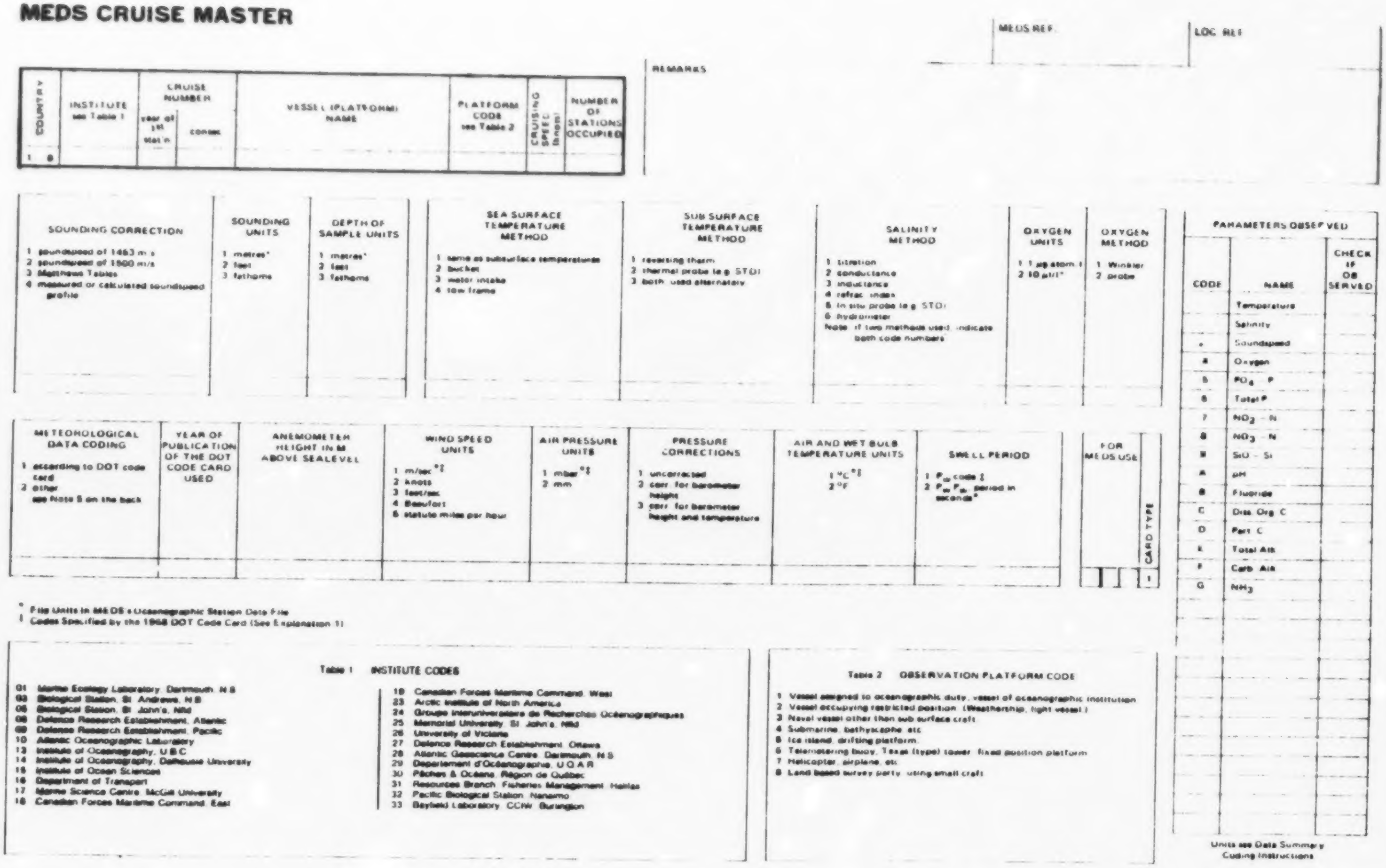
Form	Purpose
Cruise Master	To provide general information on a cruise and to control conversion of "acceptable units" into the OCEANS SYSTEM "file units" (marked by a star on the Cruise Master form, see reverse)
Deck Sheet	To submit to MEDS uncorrected temperature readings, obtained with reversing thermometers, for correction and subsequent archiving
Data Summary	To submit to MEDS, for archiving and/or data report production, calibrated and corrected oceanographic station data such as temperature, salinity, oxygen, etc.
Bridge Log	Can be used instead of the Station Master section of the Data Summary to submit station identifying information, such as time and location, and environmental data such as bottom depth and meteorological conditions.

SUMMARY OF THE ALTERNATIVE COMBINATIONS OF FORMS THAT CAN BE USED TO SUBMIT DATA TO MEDS (AT THE OPTION OF THE DATA ORIGINATOR)

Data	Purpose	Possible Form Combinations			
		Cruise Master	Deck Sheet	Data Summary	Bridge Log
Temperature readings	Correcting	■	■		
Temperature readings	Correcting and archiving	■	■	■	
		■	■		■
Temperature readings plus other data	Correcting temp. and archiving all data	■	■	■	
		■	■	■	■
Temperature (corr.) and/or other data	Archiving	■		■	
		■		■	■

MEDS740102581

Figure 5.2 MEDS Cruise Master Coding Instructions (continued).



MEDS CRUISE MASTER

COUNTRY	INSTITUTE see Table 1	CRUISE NUMBER year of 1st stat'n	CRUISE NUMBER consec	VESSEL (PLATFORM) NAME	PLATFORM CODE see Table 2	CRUISING SPEED (knots)	NUMBER OF STATIONS OCCUPIED
1 8							

REMARKS

MEDS REF.

LOC. REF.

SOUNDING CORRECTION
1 soundspeed of 1463 m/s
2 soundspeed of 1500 m/s
3 Matthews Tables
4 measured or calculated soundspeed profile

SOUNDING UNITS
1 metres*
2 feet
3 fathoms

DEPTH OF SAMPLE UNITS
1 metres*
2 feet
3 fathoms

SEA SURFACE TEMPERATURE METHOD
1 same as subsurface temperatures
2 bucket
3 water intake
4 tow frame

SUB SURFACE TEMPERATURE METHOD
1 reversing therm.
2 thermal probe (e.g. STD)
3 both, used alternately

SALINITY METHOD
1 titration
2 conductance
3 inductance
4 refrac. index
5 in situ probe (e.g. STD)
6 hydrometer
Note: if two methods used, indicate both code numbers

OXYGEN UNITS
1 1 µg atom/l
2 10 µl/l*

OXYGEN METHOD
1 Winkler
2 probe

METEOROLOGICAL DATA CODING
1 according to DOT code card
2 other
see Note 5 on the back

YEAR OF PUBLICATION OF THE DOT CODE CARD USED

ANEMOMETER HEIGHT IN M ABOVE SEALEVEL

WIND SPEED UNITS
1 m/sec *‡
2 knots
3 feet/sec
4 Beaufort
5 statute miles per hour

AIR PRESSURE UNITS
1 mbar *‡
2 mm

PRESSURE CORRECTIONS
1 uncorrected
2 corr. for barometer height
3 corr. for barometer height and temperature

AIR AND WET BULB TEMPERATURE UNITS
1 °C *‡
2 °F

SWELL PERIOD
1 P_w code ‡
2 $P_w P_w$ period in seconds*

FOR MEDS USE

CARD TYPE 1

PARAMETERS OBSERVED		
CODE	NAME	CHECK IF OBSERVED
	Temperature	
	Salinity	
[illegible]	Soundspeed	
4	Oxygen	
5	PO_4 - P	
6	Total P	
7	NO_2 - N	
8	NO_3 - N	
9	SiO - Si	
A	pH	
B	Fluoride	
C	Diss. Org. C	
D	Part. C	
E	Total Alk	
F	Carb. Alk	
G	NH_3	

Units see Data Summary Coding Instructions

* File Units in MEDS's Oceanographic Station Data File
‡ Codes Specified by the 1968 DOT Code Card (See Explanation 1)

Table 1 INSTITUTE CODES

01 Marine Ecology Laboratory, Dartmouth, N.S.
03 Biological Station, St. Andrews, N.B.
05 Biological Station, St. John's, Nfld
08 Defence Research Establishment, Atlantic
09 Defence Research Establishment, Pacific
10 Atlantic Oceanographic Laboratory
13 Institute of Oceanography, U.B.C.
14 Institute of Oceanography, Dalhousie University
15 Institute of Ocean Sciences
16 Department of Transport
17 Marine Science Centre, McGill University
18 Canadian Forces Maritime Command, East
19 Canadian Forces Maritime Command, West
23 Arctic Institute of North America
24 Groupe Interuniversitaire de Recherches Océanographiques
25 Memorial University, St. John's, Nfld
26 University of Victoria
27 Defence Research Establishment, Ottawa
28 Atlantic Geoscience Centre, Dartmouth, N.S.
29 Departement d'Océanographie, U.Q.A.R.
30 Pêches & Océans, Région de Québec
31 Resources Branch, Fisheries Management, Halifax
32 Pacific Biological Station, Nanaimo
33 Bayfield Laboratory, CCIW, Burlington

Table 2 OBSERVATION PLATFORM CODE

1 Vessel assigned to oceanographic duty, vessel of oceanographic institution
2 Vessel occupying restricted position (Weathership, light vessel)
3 Naval vessel other than sub surface craft
4 Submarine, bathyscaphe, etc.
5 Ice island, drifting platform
6 Telemetering buoy, Texas (type) tower, fixed position platform
7 Helicopter, airplane, etc.
8 Land based survey party, using small craft

Figure 5.3 MEDS Data Summary Coding Instructions.

MEDS DATA SUMMARY CODING INSTRUCTIONS

USING THIS FORM

The MEDS Data Summary is used to submit calibrated and corrected Oceanographic Station data to MEDS. The form consists of two parts, the Station Master and the Observed Detail. The **Station Master** contains all information identifying the station in space and time as well as Sounding Depth and Meteorological Data. The **Observed Detail** contains all information observed at each sampling level.

COMPLEMENTARY FORMS

The Data Summary forms must be submitted together with a **MEDS Cruise Master** for each cruise, and can, if desired, be combined with MEDS Deck Sheets and or MEDS Bridge Logs.

The MEDS Deck Sheet can be used to submit uncorrected Reversing Thermometer readings. After correction by our Thermocheck Program, the temperatures will be merged with other data contained on the MEDS Data Summary. In this case field 27 on the Data Summary must be completed to match it with input from the Deck Sheet, whereas fields 23 through 26 can be left blank.

The **MEDS Bridge Log** can be used instead of the Station Master section of the Data Summary to enter position, time, bottom depth and meteorological data. The first four fields on the Station Master, however, must still be completed to identify the station.

GENERAL NOTES

1. **Leading and trailing blanks** are allowed in all fields except the cruise number field.

2. Any **non-observed fields** can be left blank; only the first seven fields on the Station Master must be completed.

3. The location of **decimal points**, whenever applicable, is indicated on the form.

4. A **provision** has been made to enter **arbitrary station codes** or any other alphanumeric information in the "**Unassigned**" field. (This information is reproduced in **data listings**, but cannot be used to search for a station in MEDS files.)

5. Any **parameter** for which a **choice of units** can be **made**, **must**, **throughout the entire cruise**, be entered **in the units specified on the Cruise Master**.

6. **Meteorological data** can, if desired, be taken from the **appropriate** columns in the **Department of Transport's "Selected and Supplementary Ships' Meteorological Log"**, which is coded using DOT's "International Meteorological Code Card for Selected and Supplementary Ships". (See also Note 5 on the Cruise Master.) These codes have been set by the World Meteorological Organization. The codes accompanying the present instructions are based on DOT's coding instructions of January 1, 1968. If these are modified, data can be entered according to either the revised DOT Code Card or the 1968 Code Card, provided that the year of publication of the code card used is indicated. Optionally, data can also be entered in **units specified on the Cruise Master**.

7. If an entry in a certain column or field remains the same at a number of subsequent levels, it is sufficient to enter it in the highest and lowest of these levels only, connected by a **vertical arrow**.

8. **Depth and Pressure** need not both be entered; **either one of the two can be left blank**.

9. Up to ten **different parameters** can be entered for any one **station**. If **more than five** are given, enter parameters 6 through 10 on the next line of the form, **repeating the level** indication (Depth, Pressure or Wire Out, **depending** on which is used on the **preceding** line) on the **second** line. All other fields can be left blank on the second line.

10. The error columns following the Temperature and Salinity **fields** can be used to indicate **data sampled with a MPR** by entering a "P" (MPR = Multiple Probe Recorder such as STD, etc.).

Figure 5.3 con't
MEDS Data Summary Coding Instructions.

SPECIFIC NOTES

STATION MASTER

Field No.	Field Name	Column	Explanation
1	Country	1 – 2	Same as on MEDS Cruise Master, always 18 for Canadian cruises.
2	Institute	3 – 4	Same as on MEDS Cruise Master
3	Cruise Number	5 – 9	Same as on MEDS Cruise Master
4	Consecutive Station Number	10 – 12	Stations must be numbered consecutively throughout the cruise in a chronological order. A new consecutive number is required each time the station is reoccupied, even if no other locations are sampled in the intervening period. Other station code numbers can be entered in the "unassigned" field (number 11) if the data originator so desires
5	Latitude	13 – 19	Latitude of the station. Enter N or S in column 13 to indicate north or south latitude. Position is given in degrees and minutes with up to two decimals.
6	Longitude	20 – 27	Longitude of the station. Enter E or W in column 20 to indicate east or west longitude. Position is given in degrees and minutes with up to two decimals.
7	Date – Time	28 – 37	Sampling time of the first observed level is given in Greenwich Mean Time (GMT). The last two digits of the year (e.g. 70 for 1970) are followed by month (coded 01 through 12), day, hour and minute.
8	Number of Depths Observed	38 – 39	Enter the number of levels at which observations are made.
9	Blank	40 – 42	These columns are reserved to insert a computer-calculated Marsden Square number.
10	Sounding Depth	43 – 47	Sounding depth in units indicated on the MEDS Cruise Master. Note location of the decimal point.
11	Unassigned	48 – 52	These columns can be used to enter any alphanumeric information the data originator wishes to be printed in provisional or published Data Reports produced by MEDS.
12.	Cloud Amount	53	Fraction of the sky covered by clouds of any type is coded on an octal scale where 0 stands for no clouds and 8 for a completely clouded sky. (Table 1)
13	Wind Direction	54 – 55	True direction from which the wind is blowing, in tens of degrees. Enter 00 for calm, 01 for 10°, 02 for 20° and so on by ten-degree steps right around to 36 for a north wind.
	Wind Speed	56 – 57	Windspeed can be measured in metres per second, knots, feet per second or statute miles per hour, or estimated on the Beaufort scale (Table 2). It must be entered as indicated on the Cruise Master. N.B. The DOT meteorological Log code gives wind speed in knots.
14.	ww Code	58 – 59	Coded according to Table 3
15.	Pressure	60 – 62	Enter the last three digits of the barometer reading, or of sea level pressure in units indicated on the Cruise Master. For example 1026.4 mbar is coded as 264, 987.3 mbar as 873 and 768.3 mm as 683. Sea level pressure can be obtained from the barometer reading by applying corrections for barometer height and outside air temperature using Table 4. N.B. The WMO code gives sea level pressure in mbars
16.	Air Temperature	63 – 65	Enter air temperature in units stated on the Cruise Master. Negative Celsius temperatures are coded by adding 50 to the absolute value of the measurement (WMO code). Negative Fahrenheit temperatures are coded by placing a minus sign in the last column (65). Omit decimals when coding in Fahrenheit. For example 14.2°C → 14.2 | 14.2°F → 14 −14.2°C → 64.2 | −14.2°F → 14–
17.	Wet Bulb	66 – 68	Coding as for Air Temperature.
18.	Wave Period	69 – 70	Enter the estimated period of sea waves in seconds. When the sea is calm, or the period indeterminate, enter // or leave blank.
	Wave Height	71 – 72	Estimate the average height of the larger well formed waves of the sea wave system in multiples of 0.5 metres. The height is then coded in units of half-metres. For example, an observed wave height of 5 metres is coded as 10.
19.	Swell Direction	73 – 74	True direction from which the waves are coming in tens of degrees. Enter 00 for calm, 01 for 10°, 02 for 20°, and so on by ten degree steps right around to 36 for a wave from due north.
	Swell Period	75 – 76	Code as Wave Period, see instructions for field 18, or according to Table 5 as indicated on the Cruise Master. N.B. The WMO code gives swell as P_{w}.
	Swell Height	77 – 78	Code as Wave Height.
20.	For MEDS Use	79	To be entered by MEDS staff.
21.	Card Type	80	Preprinted.

Figure 5.3 con't
MEDS Data Summary Coding Instructions.

OBSERVED DETAIL

Field No.	Field Name	Column	Explanation
23	Time GMT	13 – 16	Sampling time at each observed level in hours and minutes Greenwich Mean Time.
24	Depth of Sample	17 – 21	Enter sampling depth in units indicated on the Cruise Master. Can be left blank if Pressure is entered in field 25 or if Temperature and Depth are obtained from Reversing Thermometer observations submitted on the MEDS Deck Sheet.
25	Pressure	22 – 26	Enter pressure in decibars. Can be left blank if Depth is entered in the preceding field or if Temperature and Pressure are obtained from Reversing Thermometer observations submitted on the MEDS Deck Sheet.
		27	If both Pressure and Depth are completed, enter an M or a C to indicate whether Pressure is measured or calculated from depth. It can be left blank if either Depth or Pressure is blank for the entire station.
26	Temperature	28 – 32	Temperature in degrees Celsius. Insignificant decimals can be left blank.
		33	To be left blank unless the preceding datum is: 1) doubtful, or 2) the mean of a duplicate measurement, or 3) measured with an MPR. Doubtful data can be marked with an X by the originator or a Y by MEDS. Error estimates are coded A through I as follows: Let P be the difference between the two measurements. P then is coded in multiples of the last digit allowed for on the coding form as follows: $P \leq 1$ Code A $1 < P \leq 2$ Code B $2 < P \leq 5$ Code C $5 < P \leq 10$ Code D $10 < P \leq 20$ Code E $20 < P \leq 50$ Code F $50 < P \leq 100$ Code G $100 < P \leq 200$ Code H $200 < P$ Code I A temperature error P=0.003°C is coded as C, an error P=0.02°C as E, and a salinity error P=0.08 per mille as G, etc. If the datum is based on a triple measurement, P is taken equal to the standard deviation: $P = \left\{ \frac{1}{2} \sum_{i=1}^{3} (A_i - \bar{A})^2 \right\}^{1/2}$ where A_i are the measurements and $\bar{A}$ the mean value of the observed parameter MPR data can be marked with a "P" in this column. This is necessary only if more than one measurement technique is indicated on the Cruise Master.
27.	Wire Out	34 – 37	Has to be completed only if the temperatures are submitted on the MEDS Deck Sheet. Wire out is entered in metres, no provision is made to enter fractions of metres. Do not round decimals, truncate them! 127.0 and 127.9 should both be be entered as 127.
28.	Soundspeed	38 – 42	Entered in metres per second.
		43	Enter an M or a C to indicate whether soundspeed is measured or calculated at any level.
29.	Salinity	44 – 48	Enter in parts per thousand. The third decimal place can be left blank if not observed.
		49	Enter doubtful mark or error code as explained under field 26, column 33, above.
30.	Parameter I	50	Enter code number or letter in the first column; see Table 6.
		51 – 54	Enter measured quantity in units specified in Table 6.
		55	Enter doubtful mark or error code as explained under field 26, column 33, above.
	Parameter II – V	56 – 79	Enter as specified for Parameter I.
	Parameter VI – X	Second card	Enter on next line in field 30, as specified for Parameter I above. The level identifier (Depth, Pressure or Wire Out) used on the preceding line must be repeated; all other fields may be left blank. The maximum number of parameters that can be entered per station is 10.
31	Card Type	80	Preprinted.

Table 1 CLOUD AMOUNT (N – Code)

Fraction of the sky covered by clouds

Code	Cloud Cover	Code	Cloud Cover
0	Cloudless	6	6/8
1	1/8 or less but not zero	7	7/8 or more but not 8/8
2	2/8	8	8/8, sky totally covered
3	3/8	9	Sky obscured by dense fog, heavy snow, etc., or amount cannot be estimated.
4	4/8		
5	5/8		

Figure 5.3 con't
MEDS Data Summary Coding Instructions.

Table 2 WIND SPEED IN KNOTS (ff – Code)

The Beaufort force of the wind is estimated from the appearance of the sea surface according to the table below. This table is only intended as a guide to show roughly what may be expected on the open sea, remote from land. Factors which must be taken into account are the 'lag' effect between the wind increasing and the sea getting up, and the influence of 'fetch', depth, swell, heavy rain and tide effect on the appearance of the sea. Estimation of the wind speed by this method becomes unreliable in shallow water or when close inshore, owing to the tidal effect and the shelter provided by the land.

Speed m/sec	Code ff Speed in Knots	Mean Speed (Knots)	Beaufort	Description	Appearance of Sea if the Fetch and Duration of the Blow Have Been Sufficient to Develop the Sea Fully	Probable ht. of seas in metres	
						Aver.	Max.
0.0 – 0.1	00	00	0	Calm	Sea like a mirror	–	–
0.2 – 1.8	01 – 03	02	1	Light Air	Ripples with the appearance of scales are formed, but without foam crests	0.1	0.1
1.9 – 3.3	04 – 06	05	2	Light Breeze	Small wavelets, crests have a glassy appearance and do not break	0.1	0.3
3.4 – 5.3	07 – 10	09	3	Gentle Breeze	Large wavelets, crests begin to break foam of glassy appearance, perhaps scattered white horses	0.6	0.9
5.4 – 8.4	11 – 16	14	4	Modt. Breeze	Small waves, becoming longer; fairly frequent white horses	1.0	1.5
8.5 – 10.5	17 – 21	19	5	Fresh Breeze	Moderate waves; many white horses are formed (chance of some spray).	1.8	2.5
10.6 – 14.1	22 – 27	25	6	Strong Breeze	Large waves, white foam crests everywhere (probably some spray).	2.8	3.9
14.2 – 17.2	28 – 33	31	7	Near Gale	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind	4.0	5.7
17.3 – 20.7	34 – 40	37	8	Gale	Moderately high waves, edges of crests begin to break into the spindrift, foam is blown in well-marked streaks along the direction of the wind	5.4	7.5
20.8 – 24.4	41 – 47	44	9	Strong Gale	High waves, dense streaks of foam along wind, crests begin to topple, tumble and roll over, spray may effect visibility	6.9	9.6
24.5 – 28.5	48 – 55	52	10	Storm	Very high waves with long overhanging crests, foam in great patches blown in dense white streaks along wind, sea surface takes a white appearance tumbling becomes heavy and shock-like, visibility affected	8.7	12.3
28.6 – 32.4	56 – 63	60	11	Violent Storm	Exceptionally high waves (medium sized ships may be lost to view behind waves), sea covered with long white patches of foam lying along wind, everywhere edges of crests are blown into froth, visibility affected	8.1	15.6
32.5 –	64 – 71	68	12	Hurricane	Air is filled with foam and spray; sea completely white with driving spray, visibility very seriously affected	13.5	–

Table 3 PRESENT WEATHER (ww – Code)

Use the highest code figure applicable except that 17 has preference over 20 to 49 inclusive.

00–49 NO PRECIPITATION AT SHIP AT TIME OF OBSERVATION

00–03 CHANGE OF SKY DURING PAST HOUR

Code	
00	Cloud development not observable
01	Clouds dissolving or becoming less developed
02	State of sky on the whole unchanged
03	Clouds generally forming or developing

04–09 SMOKE, HAZE, SAND OR DUST

Code	
04	Visibility reduced by smoke (not ship's smoke)
05	Dry Haze
06	Widespread dust suspended in air
07	Blowing spray at ship
08	Dust whirls in past hour (not for marine use)
09	Dust or sandstorm in sight, or at ship in past hour

10–12 MIST AND SHALLOW FOG

Code		
10	Mist (visibility 1100 yds. or more)	
11	Shallow fog in patches	*Fog not deeper than 33 ft.*
12	Shallow fog-more or less continuous	

13–16 PHENOMENA WITHIN SIGHT BUT NOT AT SHIP

Code	
13	Lightning visible, no thunder heard
14	Precipitation in sight, not reaching surface
15	Precip. beyond 3 naut. miles, reaching surface
16	Precip. within 3 naut. miles, reaching surface

17–19 THUNDER, SQUALLS, FUNNEL CLOUDS

Code	
17	Thunder at time of obsn. – no precip. at ship
18	Squalls (no precip.) in past hour or at time of obsn.

Figure 5.3 con't

MEDS Data Summary Coding Instructions.

Table 3 (Cont'd.)

17–19 THUNDER, SQUALLS, FUNNEL CLOUDS (Cont'd.)

Code		Code
19	Funnel cloud(s) seen in past hour or at time of obsn.	

20–29 PHENOMENA IN PAST HOUR BUT *NOT* AT TIME OF OBSN.

20	Drizzle (not freezing) or snow grains	*Not falling as showers*
21	Rain (not freezing)	
22	Snow	
23	Rain and snow, or ice pellets	
24	Freezing drizzle or freezing rain	
25	Shower(s) of rain	
26	Shower(s) of snow, or of rain and snow mixed	
27	Shower(s) of hail*, or of rain and hail* mixed	
28	Fog (in past hour but not at time of observation)	
29	Thunderstorm, with or without precipitation	

*Includes hail, ice pellets, or snow pellets

30–39 (Not likely to be used in ship reports)

Slight or Moderate		Heavy
30	Duststorm or sandstorm, decreasing	33
31	Duststorm or sandstorm, unchanging	34
32	Duststorm or sandstorm, increasang	35
36	Drifting snow, generally low	37
38	Blowing snow, generally high	39

40–49 FOG AT THE TIME OF OBSERVATION

40	Fog at a distance but not at ship during past hour
41	Fog in patches

Sky Visible	Visibility less than 1100 yards at time of observation	Sky Invisible
42	Fog, has become thinner in past hour	43
44	Fog, no change in past hour	45
46	Fog, has begun or thickened in past hour	47
48	Fog, depositing rime	49

50–99 PRECIPITATION AT SHIP AT TIME OF OBSERVATION

50–59 DRIZZLE

Intermittent		Continuous
50	Slight Drizzle	51
52	Moderate Drizzle	53
54	Heavy Drizzle	55
Slight		**Moderate or Heavy**
56	Freezing drizzle	57
58	Drizzle and rain mixed	59

60–69 RAIN (NOT FALLING AS SHOWERS)

Code		Code
Intermittent		**Continuous**
60	Slight rain	61
62	Moderate rain	63
64	Heavy rain	65
Slight		**Moderate or Heavy**
66	Freezing rain	67
68	Rain or drizzle with snow	69

70–79 SOLID PRECIPITATION NOT FALLING AS SHOWERS

Intermittent		Continuous
70	Slight snow in flakes	71
72	Moderate snow in flakes	73
74	Heavy snow in flakes	75
76	Ice prisms (with or without fog)	
77	Snow grains (with or without fog)	
78	Isolated starlike snow crystals (with or without fog)	
79	Ice pellets	

80–84 RAIN SHOWERS

80	Slight rain shower
81	Moderate or heavy rain shower
82	Violent rain shower
83	Shower of rain and snow mixed, slight
84	Shower of rain and snow mixed, moderate or heavy

85–90 SOLID PRECIPITATION IN SHOWERS

Slight		Moderate or Heavy
85	Shower of snow	86
87	Shower of snow pellets or ice pellets*	88
89	Shower of hail, no thunder	90

*With or without rain and/or snow

91–94 THUNDERSTORM DURING THE PAST HOUR BUT NOT AT THE TIME OF OBSERVATION

Note: Use 29 if there is no precip. at observation time

91	Slight rain	*Thunderstorm in past hour but not now – precip. occurring at time of obsn.*
92	Moderate or heavy rain	
93	Slight snow, or rain and snow mixed, or hail*	
94	Moderate or heavy snow, or rain and snow mixed, or hail*	

*Includes hail, ice pellets or snow pellets

95–99 THUNDERSTORM AT TIME OF OBSERVATION

95	Slight or modt. thunderstorm with rain and/or snow, but no hail*
96	Slight or modt. thunderstorm with hail*
97	Heavy thunderstorm with rain and/or snow, no hail*
98	Thunderstorm with dust or sandstorm
99	Heavy thunderstorm with hail*

*Includes hail, ice pellets or snow pellets

Figure 5.3 con't
MEDS Data Summary Coding Instructions.

Table 4 PRESSURE CORRECTION (MBARS)

The sea level correction must be added to the barometer reading.

Height of Barometer above Sea Surface (Ft.)	Outside Air Temperature in °C.					
	−20°C	−10°C	0°C	10°C	20°C	30°C
15	0.6	0.6	0.6	0.6	0.5	0.5
20	0.8	0.8	0.8	0.7	0.7	0.7
25	1.0	1.0	1.0	0.9	0.9	0.9
30	1.2	1.2	1.2	1.1	1.1	1.0
35	1.5	1.4	1.4	1.3	1.3	1.2
40	1.7	1.6	1.5	1.5	1.4	1.4
45	1.9	1.8	1.7	1.7	1.6	1.6
50	2.1	2.0	1.9	1.9	1.8	1.7
55	2.3	2.2	2.1	2.0	2.0	1.9
60	2.5	2.4	2.3	2.2	2.2	2.1
65	2.7	2.6	2.5	2.4	2.3	2.3
70	2.9	2.8	2.7	2.6	2.5	2.4
75	3.1	3.0	2.9	2.8	2.7	2.6
80	3.3	3.2	3.1	3.0	2.9	2.8
85	3.5	3.4	3.3	3.2	3.1	3.0
90	3.7	3.6	3.5	3.3	3.2	3.1
95	4.0	3.8	3.7	3.5	3.4	3.3
100	4.2	4.0	3.9	3.7	3.6	3.5
105	4.4	4.2	4.1	3.9	3.8	3.7
110	4.6	4.4	4.2	4.1	4.0	3.8
115	4.8	4.6	4.4	4.3	4.1	4.0
120	5.0	4.8	4.6	4.5	4.3	4.2
125	5.2	5.0	4.8	4.7	4.5	4.3

Table 5 SWELL (P_W – code)

Code	Period in sec.	Code	Period in sec.
5	5 sec. or less	1	11 sec.
6	6 sec.	2	12 sec.
7	7 sec.	3	13 sec.
8	8 sec.	4	14 sec. or more
9	9 sec.	/	Period not determined.
0	10 sec.		

Table 6 PARAMETER CODES

Code	Parameter	Units
4	Oxygen*	10 µl/l or 1 µg-at/l
5	$PO_4 - P$	0.01 µg-at/l
6	Total P	0.01 µg-at/l
7	$NO_2 - N$	0.01 µg-at/l
8	$NO_3 - N$	0.1 µg-at/l
9	$SiO_3 - Si$	0.1 µg-at/l
A	pH	0.001 pH units
B	Fluoride	0.01 mg/l
C	Dissolved organic carbon	0.01 mg/l
D	Particulate carbon	mg/m^3
E	Total Alkalinity	1 µ-eq/l
F	Carbonate Alkalinity	1 µ-eq/l
G	$NH_3 - N$	0.01 µg/l

For example: A Total Phosphate value of 17.12 µg-at/l is entered as $\boxed{1}\boxed{7}\boxed{1}\boxed{2}$, a Silicate ($SiO_3 - Si$) value of 12 µg-at/l is $\boxed{}\boxed{1}\boxed{2}\boxed{}$, a pH value of 7.82 as $\boxed{7}\boxed{8}\boxed{2}\boxed{}$.

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*Oxygen units must correspond to those indicated on the Cruise Master

VI. POST-CRUISE WORK

A. Clean-up

All working areas (wet and dry labs and hydrolab) should be thoroughly cleaned before return to port. In the hydrolab, reversing bottles and BT's must be rinsed with fresh water and the bottles oiled. All equipment and the remaining expendable materials should be repacked and secured. The original checklist should indicate the amount of each article being returned. Travel arrangements for both equipment and personnel should be confirmed via radio before returning to port. The Chief Scientist should ensure that the following materials are removed from the vessel and are safely transported to the shore laboratory:

1. fish sampling records,
2. otolith collections,
3. hydrographic records,
4. BT slides, XBT traces or NXBT data
5. water samples,
6. echosounder traces from bridge,
7. navigational charts with each set plotted, numbered and any special comments attached,
8. special data collections when applicable,
9. preserved specimens.

B. Processing Cruise Data and Material

1. Dispensing Cruise Records and Samples

On return to the laboratory, the items listed above should be treated in the following manner:

1, 6, 7, 8 & 9. Fish sampling and echosounder traces, charts, preserved specimens, and special data collections should be retained by the Chief Scientist for storage, editing or distribution to the individuals concerned.

3, 4, & 5. One copy of the hydrographic records should be retained by the Chief Scientist; the original copy with BT slides or graphs and water samples should be forwarded to the hydrographic section/technician for coding of the temperature data as required.

2. Otolith collections must be checked to assure completeness and correct numbering: checks must also be made to ensure that all fish from which otoliths were collected, are recorded and that the "Fish" ("Biological") data sheets record the fact with numbers corresponding to those on the envelope or in the vial. Otoliths then go to the age readers for reading and coding of the data.

1,3,6 & 7. The fish sampling, hydrographic, and echosounder records, and navigational charts are then passed to the Sampling and Surveys Group technician who should check with the Chief Scientist to confirm the "type of experiment" code for each set, and any special instructions regarding coding of the cruise in question.

2. Cruise Report

The cruise report should be written by the Chief Scientist within 2 weeks after the completion of the cruise. The report should conform to the format outlined in paragraph C, Preparing Cruise Reports.

3. Visual Checking, Coding and Keypunching

Initially, a general check should be made to ensure that the cruise, stratum and set numbers were entered correctly on all of the data sheets. This is particularly important for the "Station" data sheets.

"Deck" data sheet

Verify that species names recorded on these sheets are clear and unambiguous. When subsampling was conducted, confirm that the weights of the baskets sampled were circled correctly.

"Station" data sheet

a. Check depth recorded against echo sounder traces (apply correction factor when necessary).

b. Check Loran "C" (or Decca) bearings recorded against the navigational chart and use these bearings to measure graphically, the distance travelled during each tow, and estimate the ship's speed over the bottom.

c. Determine DFO statistical unit area, NAFO Division, and stratum when data are from a stratified random or fixed survey set.

d. Check that data transcribed from hydrographic records are correct.

e. Contact hydrographic section/technician (Sampling and Surveys Group) for salinity results and bathythermograph slide readings for bottom temperature.

f. Code the front of the "Station" data sheet except for the following data:
"No. of fish species",
"Total weight of fish catch (kg)".

These are checked, after the "Catch" data sheet has been checked.

"Catch" data sheet

(Prior to 1986 it was the reverse side of the "Station and Set" data sheet)

a. Transfer all data required from the "Deck", "Length", and "Fish" ("Biological") data sheets. Weight of each species in the catch should be taken from the "Deck" data sheet when available. If it is not available, then it can be obtained by adding the weights of each individual fish from the "Fish" ("Biological") data sheets.

b. Check that all the species are recorded.

c. Now enter the number of fish and the number of invertebrate species and the weight of the total fish catch on the "Station" data sheet.

"Length" data sheet

a. Carry forward data from the "Station" data sheet.

b. Check that all species which were measured for length are recorded (prior to 1986 from the tally) and that the fish that were sampled on the "Fish" ("Biological") data sheet(s) all have "Length" data sheets. If corresponding "Length" data sheet(s) were not recorded for certain species that were sampled in detail (ie. "Fish" data sheets) then "Length" data sheets should be "created" from the corresponding "Fish" data sheets.

c. Length frequencies by 1 cm groupings have been used for all species in the southern Gulf survey since 1985; prior to that 1,2, and 3 cm groupings were used for different species.

d. Whenever possible, the following species must be recorded on the "Length" data sheets with the sexes separate:

flatfish
redfish
white hake
all skates
dogfish

All others are recorded with the sexes combined.
Note: **when the sexes are recorded separately, no "combined" entry is required.**

e. Sex.
- if no observations were made - code 9.
- if observed and recorded on the "Fish" ("Biological") data sheet but not recorded on the "Length" data sheet - code 4 (This frequently occurs with haddock and cod).

Note: a zero or blank means unexamined or undeterminable.

f. The ratio should be calculated using numbers caught and sampled when this information is available. The next best ratio is by weight and the worst by using numbers of baskets. Prior to 1986, the spaces on the "Length Frequency Transfer" data sheet, between the double lines below "Code" and above "number sampled" were not keypunched and thus did not need to be filled in by the coder except, in so far as it is useful in calculating the "ratio". Since 1986, the sampled/caught values are entered and keypunched -the ratio is now machine calculated.

"Fish" ("Biological") data sheet

a. Carry forward data from "Station" data sheet.

b. Check that the fish for each species were numbered uniquely and if possible consecutively when otoliths were taken and that this number is recorded in the otolith vial or on the envelope throughout the cruise.
Consecutive numbers are not essential but make later accounting easier. Unique numbers for each species are essential.

c. If "condition" column of stomach contents section is coded "9" or blank, leave rest of section blank.

d. If "type" column of ageing material section is coded "9" or blank, leave rest of section blank.

After editing, the fish sampling data are passed to the keypunch operator for keypunching. **No checking of the coding should be required at this stage.** The navigational charts, echosounder traces and hydrographic records can now be filed.

4. Computer Editing and Correcting

1. The keypunched data files are read by the computer using a series of programs designed to list the data and to check for errors and inconsistencies in the data (part of the RVAN suite of programs, Clay, MS1989).

2. The data and error listings are proof-read and/or checked against the original data sheets and all errors in coding and keypunching noted on the listings. Recording errors are reconcilled or the data are deleted.

3 The annotated listings are returned to the data processing section for correction of the computer files.

4. Final corrected listings and summaries are prepared by computer, bound, and filed. The original data sheets are also filed. Each confirmed and corrected error should be noted and initialled by the individual concerned on the original data sheets in a readily distinguished colour (ie. red).

C. Preparing Cruise Reports

1. Reports should be accompanied by a map illustrating station locations, station numbers, and cruise track. This should be of high quality.

2. Reports should be brief, to the point, and follow the prescribed format (Table 6.1).

3. The affiliation of personnel should be specified for non-MAFD personnel only. Vessel technicians (*Lady Hammond*) and students should be so identified.

4. Results should:

(a) describe the success (or otherwise) of cruise operations in relation to objectives,

(b) describe any unusual observations which may be of general interest, and

(c) include those results which may be of interest to the fishing industry (eg. location of fish concentrations).

5. Authority for release of cruise reports resides with the Division Chief, Marine and Anadromous Fish Division.

6. Three tables should be included in resource survey cruise reports as an integral part of the results. The format of these tables is given below:

(a) Total weight and number of each species caught.

(b) Species weight and numbers per set preserved, and examined for maturity, sex, parasites, etc. for the important commercial species (ie. cod, white hake, plaice, etc.).

(c) Species collections listed as:

Species Item No. of Specimens Client (Name and affiliatio

7. Appendices can be attached and at least one should be included giving set by set location details as in Table 6.2.

8. When approval for release of the cruise report is obtained, copies should be forwarded to all individuals listed in Appendix IIc.

Table 6.1 Format of the cruise report for surveys conducted by personnel of the Marine and Anadromous Fish Division.

MARINE AND ANADROMOUS FISH DIVISION
Department of Fisheries and Oceans
Gulf Fisheries Center
P.O. Box 5030, Moncton
New Brunswick, CANADA E1C 9B6

CRUISE REPORT

VESSEL AND CRUISE NUMBER:

DEPARTURE (Port and date):

ARRIVAL (Port and date):

PERSONNEL (Affiliation):

Chief Scientist:-

Watch #1	Watch #2
(Watch leader)	(Watch leader)
(Watch member)	(Watch member)
(Watch member)	(Watch member)

PURPOSE:

METHODS:

RESULTS:

Date:

Approved for Release

Chief Scientist

Chief,
Marine and Anadromous Fisheries Division.

Table 6.2 Set by set station locations that should accompany the Cruise Report (sample used for fixed station survey).

Strata	Set no. day/night	Station Type	Lat.	Long.	Depth f	No. Species	Catch (85)	Unit Area	Bottom Type
*32	54		4556	6232	23	11	31	433	3
*32	55		4555	6303	18	10	52	433	1
32	254	ALT	4556	6232	23	13	87	433	3
32	255	ALT	4555	6303	18			433	1
	(note: these are day/night sets of the same location)								
33	82	ALT	4616	6131	31	6	290	432	2
33	56		4600	6210	23	12	121	432	1
33	81	ALT	4607	6143	27	8	292	432	1
*33	57		4552	6214	18	11	208	432	1
33	113	ALT	4607	6158	24	12	930	432	4
33	112	ALT	4619	6150	26	7	97	432	2
*33	58		4610	6210	20	15	201	432	2
33	142	ALT	4610	6209	20	11	249	432	2
33	143	ALT	4601	6209	21	10	141		
34	141		4631	6126	33	5	58	432	2
34	59		4633	6115	37	8	180	432	2
34	60		4635	6142	32	5	202	432	3
34	111	ALT	4645	6127	38	3	75	432	2
34	61		4657	6118	29	5	251	432	4
34	110	ALT	4643	6141	37	5	99	432	3
34	131	ALT	4705	6112		4	89	431	2
35	62		4708	6151	18	8	523	431	4
35	132	ALT	4718	6123	19	8	116	431	2
35	63		4746	6109	16	8	206	431	3
35	130	ALT	4702	6132	20	9	277	431	4
35	134	ALT	4737	6104		6	303	431	3
36	64		4719	6058	32	5	52	431	2
36	136	ALT	4737	6042	32	7	255	431	2
36	65		4720	6028	40	3	88	431	2
36	133	ALT	4728	6056	27	4	155	431	2
36	66		4748	6057	30	8	43	431	2
36	138	ALT	4720	6040					
37	67		4657	6057	73	9	47	432	1
37	68		4657	6046	78	12	142	432	3
37	139	ALT	4708	6039	101	10	352	431	2
37	69		4709	6024	94	7	102	431	1
37	140	ALT	4704	6056		3	106	431	1
38	70		4727	6030	69	5	77	431	2
38	71		4757	6055	98	13	237	431	2
38	135	ALT	4742	6035		8	17	431	1

VII. ANALYSIS

A. Overview

The RVAN (Research Vessel ANalysis) package of computer programs (Clay, MS1989) were prepared by the Gulf Region over the period from 1985-1988. This multipurpose package consists of a series of utility and statistical programs that include a data checking/validation system, a report generator, an analysis system to provide biomass and catch-at-age estimates and a plotting package to map various distributional aspects of the data.

The input data can be either in the form used by the Gulf Region or that used prior to 1984 by the Maritimes Region of the DFO. These programs were designed to replace the STRAT and STRAP systems utilized currently and in the past by the other regions within the Atlantic zone (STRAP is a newer, re-designed program that has replaced STRAT).

All programs in the RVAN suite are written in Turbo Pascal (ver 3.0) and some utilize utilities from the Turbo Toolbox (eg. Turbo Sort) and the Turbo Grafix Toolbox. Turbo Pascal is available on CPM80, CPM86, MS/DOS and Apple MacIntosh operating systems. The program files (--.COM) and the necessary associate files require approximately 1 Mb of disk space in total, although each program is independent and thus all programs will work on 360 K diskettes. Many of the programs produce data files and some produce intermediate temporary files for storage and sorting. At least 50 K of disk space (preferably 100 K) should be free for a moderate sized cruise (eg. 30 to 50 sets).

The programs are all interactive. The user is required to identify both themself and the data set to be used. Each analysis program uses a separate parameter file containing much of the information (eg. detailed formatting, header set-ups, data selection criteria, etc.) required to customize the output.

B. Components

A brief description of each of the RVAN utility and statistical analysis programs follows (for a more comprehensive description of these programs, their utilization and a listing of the source code the reader is referred to Clay MS1989):

Utility

AltCol - ALTer or add a COLumn to existing dat files (converts pre- and post-revision data files to a single format).

LoranC2- Converts loran C readings to degrees, minutes and seconds.

DataLst- Lists research vessel data file by file, substituting alpha descriptions for numeric codes and produces output for mapping.

BioFreq - BIOlogical FREQuency distribution of age, length, maturity and weight data by stratum for all 'detailed' fish, - representative of sampled fish, not of population.

CheckIT -Edit program for checking internal consistency and data limitations.

BldXXX -Build Set, Catch, Length, and Biological data files (Produces size-reduced data files).

Statistics

CatStat - Catch statistics for species and cruise data to give area expansion of biomass and numbers for both single strata and the entire Gulf of St. Lawrence.

MALKey-Multi-cruise Maturity/Age Length KEY, a three part program to build an age- or maturity-at-length key for a species from one or more cruises (MALKey1). The second part (MALKey2) uses this key expanded by the length frequency data from the same or different cruises to establish population-, age- or maturity-at-length keys for the total catch of the cruise(s) and for the total southern Gulf of St. Lawrence. The third part (MALKey3) calculates set-by-set catch-at-age, and both strata and survey variance.

con't

Graphics

PikAMap-Selects or edits a subset of data from a master map data base or recently digitized map.

CatMap - Catch statistics for species and cruise data selected for mapping by AtlMap.

AtlMap - Displays location and abundance of catches from selected data.

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APPENDIX I MAPS OF SURVEY AREA

Figure I.1 Department of Fisheries and Oceans statistical unit areas within the southern Gulf of St. Lawrence.

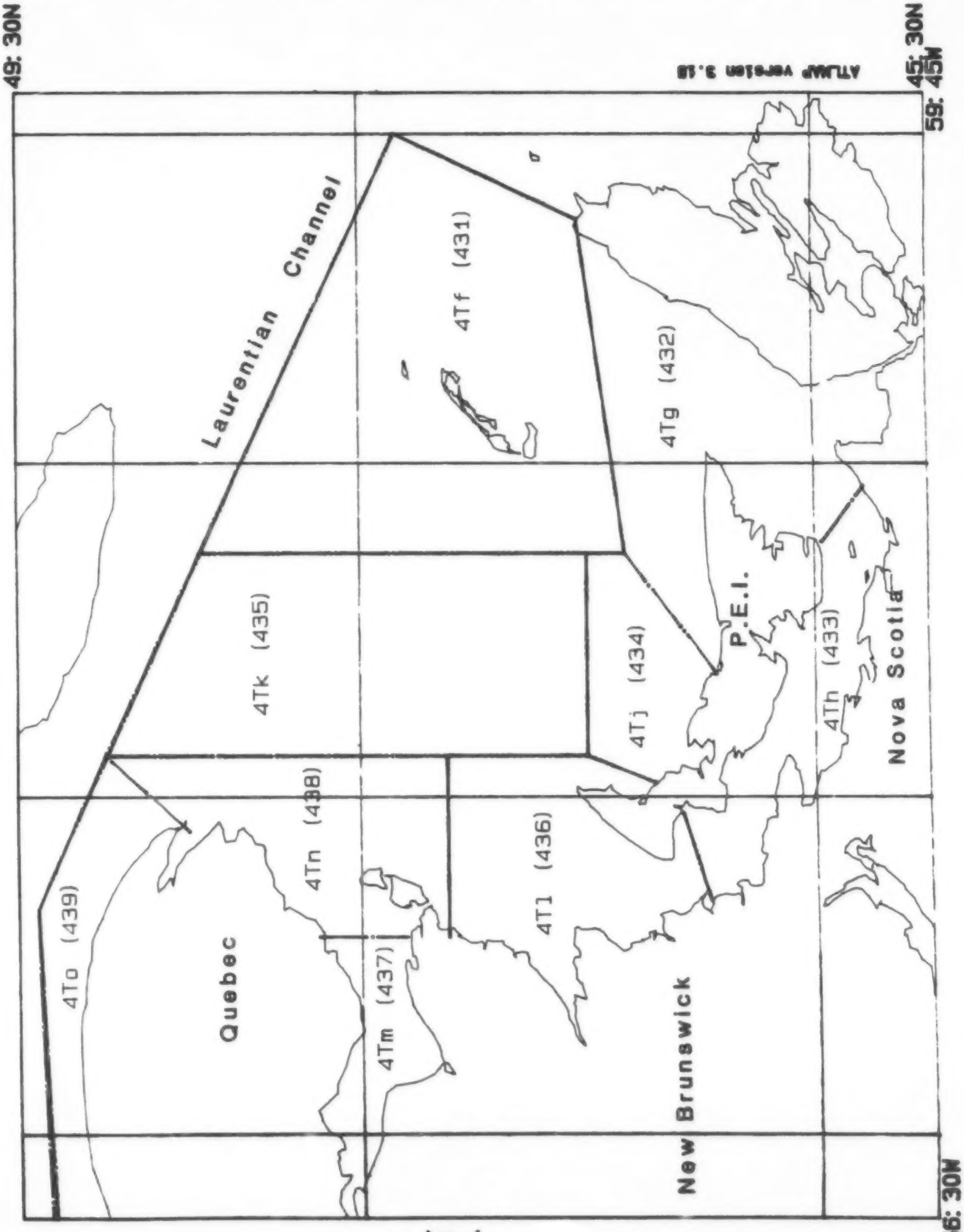


Figure I.2 Bathymetry of the southern Gulf of St. Lawrence.

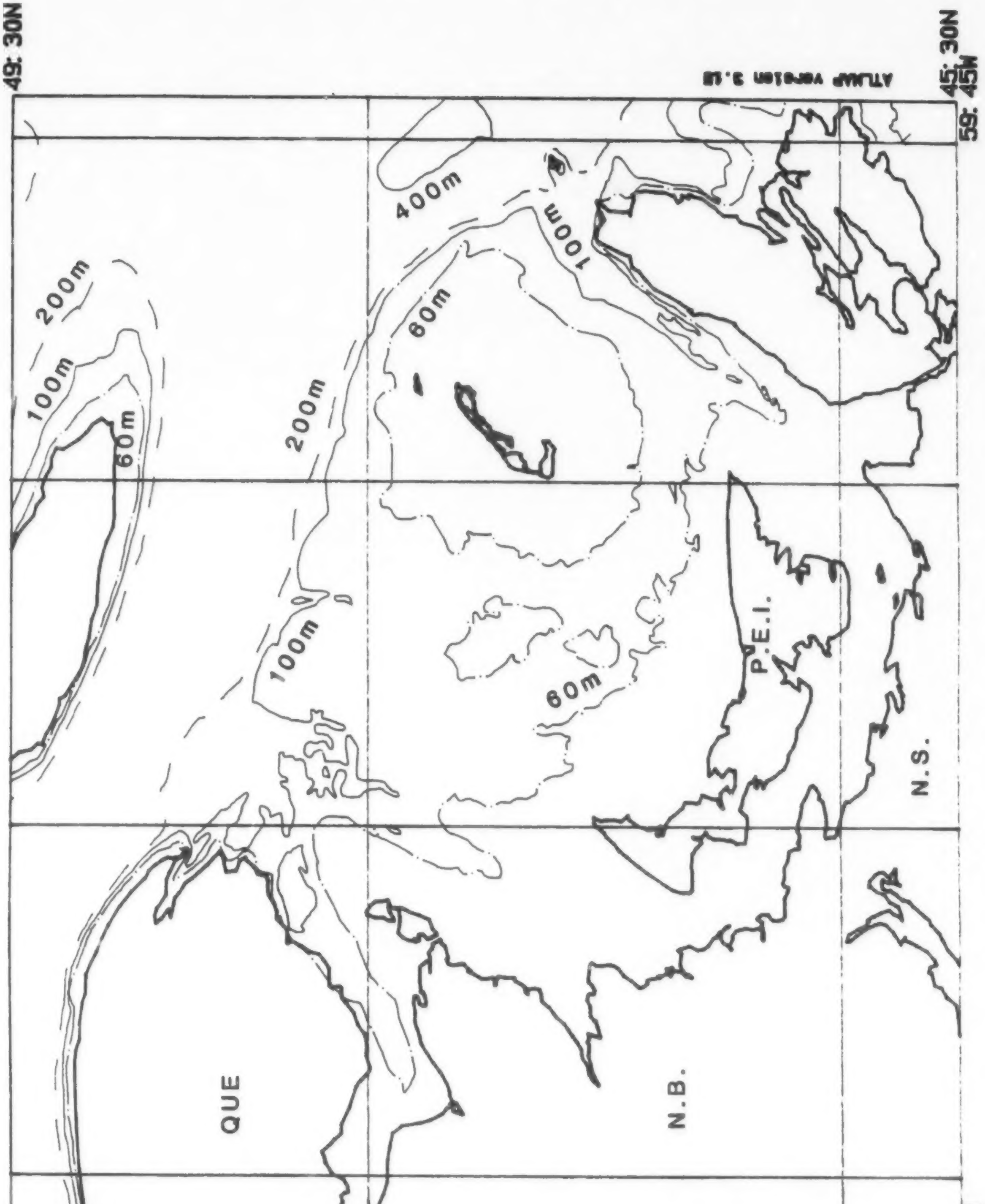


Figure I.3 Stratification of the southern Gulf of St. Lawrence used by the Department of Fisheries and Oceans for demersal fish surveys.

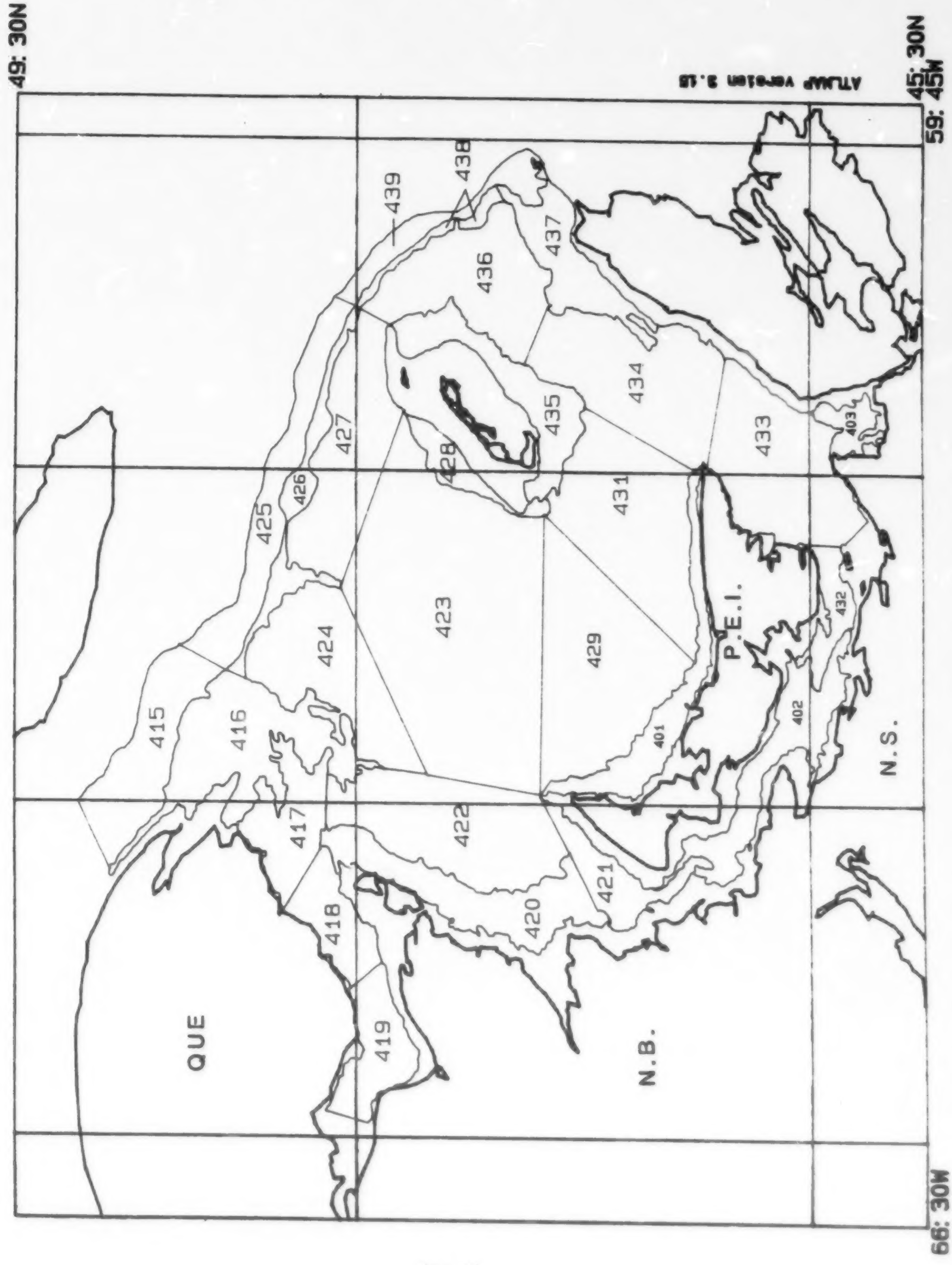
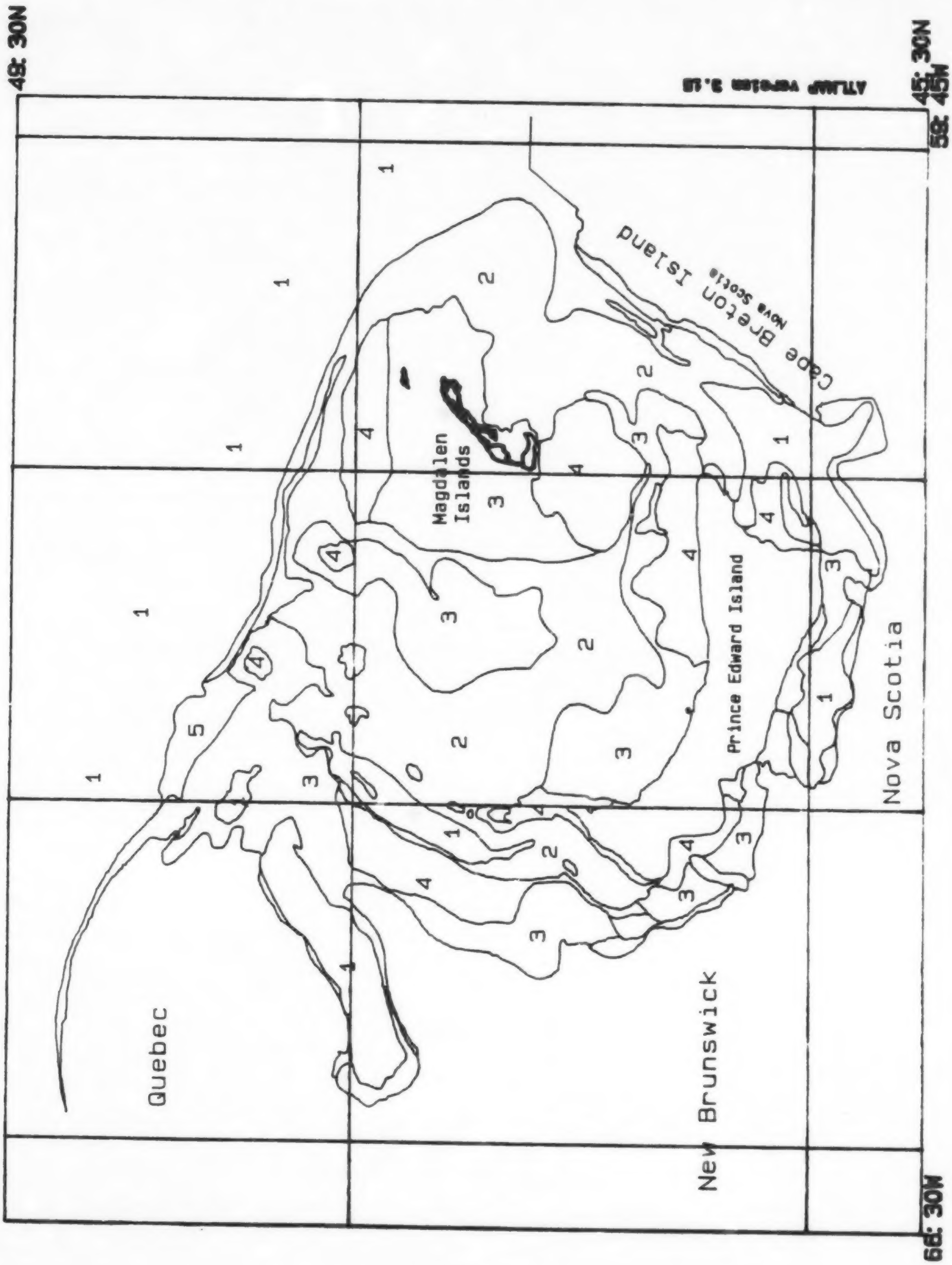


Figure I.4 Bottom types (sediments) of the southern Gulf of St. Lawrence (data for map digitized from maps in Loring and Nota, 1973). Coastline not shown.



APPENDIX II MAILING LISTS

A. Cruise permit (Research Permit)

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DISTRIBUTION LIST

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_____ Western Newfoundland - P.O. Box 2009, Herald Avenue, Herald Towers, 6th floor, Corner Brook, Newfoundland, A2H 6Z6

_____ Eastern New Brunswick - P.O. Box 1670, 3490 Principale Street, Tracadie, N.B., E0C 2B0

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____ Manager, Surveillance Operations, Scotia-Fundy Region, P.O. Box 550, 1649 Hollis Street, Halifax, N.S., B3J 2S7

____ Superintendent of Operations, Research and Patrol Vessels, Scotia-Fundy Region, Bedford Institute of Oceanography, P.O. Box 1006, Dartmouth, N.S., B2Y 4A2

INDIVIDUALS CONCERNED

1. ______________________________

2. ______________________________

3. ______________________________

4. ______________________________

5. ______________________________

B. Cruise Program

- all cruise personnel
- ships captain to be copied with Marine Superintendent

Regional Marine Superintendent
Marine Services Division
Management Services Branch
Department of Fisheries & Oceans
P.O. Box 550
Halifax, Nova Scotia
B3J 2S7

- regional division chiefs (see below)
- agencies requesting samples

C. Cruise Report

Deputy Minister
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Ottawa, Ontario
K1A OE6

Marine Sciences and
Information Directorate
Department of Fisheries & Oceans
Centennial Towers, 200 Kent Street
Ottawa, Ontario
K1A OE6

Marine Environmental Data Service Branch
Ocean Science Surveys
Department of Fisheries & Oceans
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Prince Edward Island Department of Fisheries
and Aquaculture
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Charlottetown, P.E.I., C1A 7N8

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Fredricton, N.B. E3B 5H1

Director
Huntsman Marine Laboratory
Brandy Cove
St. Andrews, New Brunswick
EOG 2XO

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Moncton, New Brunswick
E1C 9B6

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Department of Agriculture & Fisheries
P.O. Box 101, Victoria Road
Torry, Aberdeen
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AB9 8DB

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Executive Director
Seafood Producers Association
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Dartmouth, Nova Scotia
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National Sea Products Ltd.
P.O. Box 2130
Halifax, Nova Scotia
B3J 3B7

Northwest Atlantic Fisheries Organization
P.O. Box 638
Dartmouth, Nova Scotia
B2H 3Z6

APPENDIX III SPECIES CODES

Sorted alphabetically (scientific name)

This file is modified from one provided in 1987 by the Marine Fish Division, St. Andrews, N.B.

	scientific	common
	ABLENNES HIANS	FLAT NEEDLEFISH
4551	ABRALIA REDFIELDI	ABRALIA REDFIELDI
4550	ABRALIA SP.	ABRALIA SP.
4552	ABRALIA VERANYI	ABRALIA VERANYI
4554	ABRALIOPSIS PFEFFERI	A. PFEFFERI
4553	ABRALIOPSIS SP.	ABRALIOPSIS SP.
54	ABUDEFDUF SAXATILIS	SERGEANT MAJOR
3400	ACANTHOCEPHALA P.	ACANTHOCEPHALA P.
830	ACANTHOCYBIUM SOLANDERI	WAHOO
	ACANTHURUS BAHIANUS	OCEAN SURGEON
	ACANTHURUS CHIRURGUS	DOCTORFISH
	ACANTHURUS COERULEUS	BLUE TANG
584	ACANTHURUS SP.	ACANTHURUS SP.
2923	ACARTIA LONGIREMIS	A. LONGIREMIS
249	ACIPENSER BREVIROSTRUM	SHORTNOSE STURGEON
243	ACIPENSER OXYRHYNCHUS	AMER. ATL. STURGEON
272	ACIPENSERIDAE F.	STURGEONS
	ACIPENSERIFORMES (GLANIOSTOMI) O.	STURGEONS (NS)
8208	ACTINARIA C.	ACTINARIA C.
8319	ACTINAUGE VERRILLII	A. VERRILLII
2981	AEGA PSORA	AEGA PSORA
3030	AEGIDAE F.	AEGIDAE F.
2873	AEGININA LONGICORNIS	A. LONGICORNIS
4420	AEOLIDIA SP.	PLUMED SEASLUG
	AEQUIPECTEN GIBBUS	CALICO SCALLOP
4336	AEQUIPECTEN GLYPTUS	A. GLYPTUS
	AEQUIPECTEN IRRADIANS	BAY SCALLOP
2942	AETIDEUS ARMATUS	AETIDEUS ARMATUS
	AETOBATUS NARINARI	SPOTTED EAGLE RAY
8411	AGLANTHA DIGITALE	AGLANTHA DIGITALE
3181	AGLAOPHAMUS CIRCINATA	A. CIRCINATA
351	AGONIDAE F.	ALLIGATOR FISH (NS)
350	AGONUS DECAGONUS	ATL SEA POACHER
441	AHLIA EGMONTIS	AHLIA EGMONTIS
517	AHLIESAURUS BERRYI	A. BERRYI
837	ALBULA SP.	ALBULA SP.
175	ALBULA VULPES	BONEFISH
	ALBULIDAE	BONEFISHES (NS)
865	ALDROVANDIA PHALACRA	A. PHALACRA
	ALECTIS CITIARIS	AFRICAN POMPANO
	ALEPISAURIDAE (PLAGYODONTIDAE)	LANCETFISHES (NS)
731	ALEPISAURUS BREVIROSTRIS	SHORTNOSE LANCETFISH
710	ALEPISAURUS FEROX	LONGNOSE LANCETFISH
	ALEPOCEPHALIDAE	SMOOTHHEADS (NS)
594	ALEPOCEPHALUS AGASSIZII	SMOOTHHEAD,AGASSIZ'S
724	ALEPOCEPHALUS BAIRDII	BAIRDS SMOOTHEAD
1725	ALLOGROMIA SP.	ALLOGROMIA SP.
4533	ALLOPOSIDAE F.	ALLOPOSIDAE F.
	ALOPIAS SUPERCILIOSUS	BIGEYE THRESHER
234	ALOPIAS VULPINUS	THRESHER SHARK
	ALOPIIDAE F.	SHARKS,THRESHER (NS)
165	ALOSA AESTIVALIS	BLUEBACK HERRING
264	ALOSA MEDIOCRIS	HICKORY SHAD
62	ALOSA PSEUDOHARENGUS	ALEWIFE
61	ALOSA SAPIDISSIMA	SHAD AMERICAN
281	ALOSA SP.	ALOSA SP.
	ALUTERUS HEUDELOTI	DOTTEREL FILEFISH
	ALUTERUS MONOCEROS	UNICORN FILEFISH
1	ALUTERUS SCHOEPFI	ORANGE FILEFISH
2	ALUTERUS SCRIPTUS	FILEFISH,SCRAWLED
4260	AMAUROPSIS ISLANDICA	A. ISLANDICA
890	AMIA CALVA	AMIA CALVA
4711	AMICULA VESTITA	AMICULA VESTITA
599	AMMODYTES AMERICANUS	AMER SAND LANCE
610	AMMODYTES DUBIUS	NORTHERN SAND LANCE
1226	AMMODYTES EGGS	SAND LANCE EGGS
	AMMODYTES HEXAPTERUS	SAND LANCE,INSHORE
611	AMMODYTES SP.	SAND LANCE (NS)
590	AMMODYTIDAE F.	SAND LANCES (NS)
	AMMODYTOIDEI (SUBORDER)	SAND LANCES (NS)
2857	AMPELISCA AGASSIZI	FOUR-EYED AMPHIPOD
2858	AMPELISCA SP.	AMPELISCA SP.
2855	AMPELISCIDAE F.	AMPELISCIDAE F.
3177	AMPHARETE FINMARCHICA	A. FINMARCHICA
3176	AMPHARETE SP.	AMPHARETE SP.
3146	AMPHARETIDAE F.	AMPHARETIDAE F.
810	AMPHELIKTURUS DENDRITICUS	PIPEHORSE
1828	AMPHIOXUS SP.	SAND BLISTERS
2800	AMPHIPODA O.	AMPHIPODA O.
4201	AMPHISSA HALIAEETI	A. HALIAEETI
2860	AMPHITHOIDAE F.	AMPHITHOIDAE F.
3148	AMPHITRITE SP.	TEREBELLID WORM
426	ANARCHIAS YOSHIAE	PYGMY MORAY
59	ANARHICHADIDAE F.	WOLFFISH,UNIDENT.
52	ANARHICHAS DENTICULATUS	NORTHERN WOLFFISH
50	ANARHICHAS LUPUS	STRIPED ATL WOLFFISH
51	ANARHICHAS MINOR	SPOTTED WOLFFISH
	ANCHOA CUBANA	CUBAN ANCHOVY
58	ANCHOA HEPSETUS	STRIPED ANCHOVY
836	ANCHOA LAMPROTAENIA	A. LAMPROTAENIA
	ANCHOA LYOLEPIS	DUSTY ANCHOVY
254	ANCHOA MITCHILLI	BAY ANCHOVY
	ANCHOA NASUTA	LONGNOSE ANCHOVY
	ANCHOVIELLA PERFASCIATA	FLAT ANCHOVY
4556	ANCISTROCHEIRINAE S.F.	ANCISTROCHEIRINAE S.F.
	ANCYLOPSETTA DILECTA	THREE-EYED FLOUNDER
	ANCYLOPSETTA QUADROCELLATA	OCELLATED FLOUNDER
651	ANGUILLA ANGUILLA	EUROPEAN EEL

600	ANGUILLA ROSTRATA	AMERICAN EEL
648	ANGUILLIDAE F.	EEL-UNIDENTIFIED
	ANGUILLIFORMES (APODES) O.	EELS (NS)
634	ANGUILLOIDEI S.O.	UNIDENTIFIED EELS
7116	ANISAKIS SP.	ANISAKIS SP.
	ANISOTREMUS VIRGINICUS	PORKFISH
1400	ANNELID EGGS	ANNELID EGGS UNID.
3000	ANNELIDA P.	SEGMENTED WORMS
3155	ANOBOTHRUS GRACILIS	A. GRACILIS
4380	ANOMIA SIMPLEX	ANOMIA SIMPLEX
4381	ANOMIA SP.	ANOMIA SP.
4328	ANOMIIDAE F.	ANOMIIDAE F.
2844	ANONYX SARSI	ANONYX SARSI
2833	ANONYX SP.	ANONYX SP.
774	ANOPLOGASTER CORNUTA	OGREFISH
	ANOTOPTERIDAE F.	DAGGERTOOTHFISHES (NS)
732	ANOTOPTERUS PHARAO	DAGGERTOOTH
398	ANTENNARIIDAE F.	FROGFISHES (NS)
397	ANTENNARIUS OCELLATUS	OCELLATED FROGFISH
	ANTENNARIUS RADIOSUS	SINGLESPOT FROGFISH
	ANTENNARIUS SCABER	SPLITLURE FROGFISH
375	ANTENNARIUS SP.	ANTENNARIUS SP.
	ANTHIAS ASPERILINGUIS	CRIMSON BASS
498	ANTHIAS NICHOLSI	YELLOWFIN BASS
668	ANTHIAS SP.	ANTHIAS SP.
8300	ANTHOZOA C.	SEA ANEMONE
3051	ANTHURIDAE F.	ANTHURIDAE F.
3050	ANTHURIDEA S.O.	ANTHURIDEA S.O.
384	ANTIGONIA CAPROS	DEEPBODY BOARFISH
366	ANTIGONIA COMBATIA	SHORTSPINE BOARFISH
113	ANTIMORA ROSTRATA	BLUE ANTIMORA/HAKE
2896	ANURIDA MARITIMA	ANURIDA MARITIMA
2841	AORIDAE F.	AORIDAE F.
363	APELTES QUADRACUS	FOURSPINE STICKLEBACK
784	APHANOPUS CARBO	BLACK SCABBARDFISH
3211	APHRODITA ACULEATA (OBSOLETE)	APHRODITA ACULEATA
1420	APHRODITA ACULEATA EGGS	SEA MOUSE EGGS UNID.
3200	APHRODITA HASTATA	SEA MOUSE
3212	APHRODITA SP.	APHRODITA SP.
3210	APHRODITIDAE F.	APHRODITIDAE F.
3158	APISTOBRANCHIDAE F.	APISTOBRANCHIDAE F.
	APOGON AUROLINEATUS	BRIDLE CARDINALFISH
781	APOGON MACULATUS	FLUMEFISH
685	APOGON PSEUDOMACULATUS	TWOSPOT CARDINALFISH
782	APOGON SELLICAUDE	APOGON SELLICAUDE
697	APOGONIDAE F.	CARDINAL FISHES
697	APOGONIDAE F.	CARDINAL FISHES
4230	APORRHAIS SP.	DUCK OR PELICAN FOOT
239	APRISTURUS PROFUNDORUM	DEEPSEA CAT SHARK
442	APTERICHTUS ANSP	ACADEMY EEL
443	APTERICHTUS KENDALLI	FINLESS EEL
6421	ARABACIA PUNCTULATA	PURPLE SEA URCHIN
6420	ARABACIA SP.	ARABACIA SP.
3116	ARABELLA IRICOLOR	OPAL WORM
3107	ARABELLIDAE F.	ARABELLIDAE F.
5200	ARCHAEOGASTROPODA O.	LIMPET (NS)
4573	ARCHITEUTHIDAE F.	ARCHITEUTHIDAE F.
99	ARCHOSARGUS PROBATOCEPHALUS	SHEEPSHEAD
4304	ARCTICA ISLANDICA	OCEAN QUAHAUG
	ARCTOGADUS GLACIALIS	COD, POLAR
	ARCTOGADUS GLACIALIS	COD, POLAR
3161	ARENICOLA MARINA	LUGWORM
160	ARGENTINA SILUS	ARGENTINE (ATL)
1252	ARGENTINA SILUS EGGS	ARGENTINA SILUS EGGS
161	ARGENTINA STRIATA	STRIATED ARGENTINE
288	ARGENTINIDAE F.	ARGENTINES (NS)
153	ARGENTINOIDEI S.O.	ARGENTINOID (NS)
2411	ARGIS DENTATA	ARGIS DENTATA
2410	ARGIS SP.	ARGIS SP.
4531	ARGONAUTA ARGO	PAPER NAUTILUS
4532	ARGONAUTIDAE F.	ARGONAUTIDAE F.
4325	ARGOPECTEN GIBBUS	CALICO SCALLOP
4324	ARGOPECTEN IRRADIANS	BAY SCALLOP
700	ARGYROPELECUS ACULEATUS	ATL SILVER HATCHFISH
422	ARGYROPELECUS AFFINIS	A. AFFINIS
705	ARGYROPELECUS GIGAS	A. GIGAS
706	ARGYROPELECUS HEMIGYMNUS	A. HEMIGYMNUS
707	ARGYROPELECUS LYCHNUS LYCHNUS	A. LYCHNUS LYCHNUS
3162	ARICIDEA SP.	ARICIDEA SP.
785	ARIOMMA BONDI	SILVER-RAG
	ARIOMMA MELANUM	BROWN DRIFTFISH
	ARIOMMA REGULUS	SPOTTED DRIFTFISH
813	ARIOMMA SP.	ARIOMMA SP.
579	ARIOSOMA BALEARICUM	BANDTOOTH CONGER
430	ARIOSOMA SP.	ARIOSOMA SP.
518	ARISTOSTOMIAS LUNIFER	A. LUNIFER
583	ARISTOSTOMIAS PHOTODACTYLUS	A. PHOTODACTYLUS
519	ARISTOSTOMIAS POLYDACTYLUS	A. POLYDACTYLUS
338	ARISTOSTOMIAS SP.	ARISTOSTOMIAS SP.
818	ARISTOSTOMIAS TITTMANNI	A. TITTMANNI
	ARIUS FELIS	SEA CATFISH
880	ARTEDIELLUS ATLANTICUS	HOOKEAR SCULP'N,ATL.
323	ARTEDIELLUS SP.	HOOKEAR SCULPIN (NS)
306	ARTEDIELLUS UNCINATUS	ARCTIC HOOKEAR SCULPIN
1821	ASCIDIA SP.	SEA SQUIRTS
1820	ASCIDIA SP. ADULT	ADULT ASCIDIANS
1825	ASCIDIA SP. LARVAL	LARVAL ASCIDIANS
	ASCOPHYLLUM NODOSUM	ROCKWEED
340	ASPIDOPHOROIDES MONOPTERYGIUS	ALLIGATORFISH
341	ASPIDOPHOROIDES OLRIKI	ARCTIC ALLIGATORFISH
4338	ASTARTE CASTANEA	ASTARTE CASTANEA
4316	ASTARTE SP.	ASTARTE SP.
4307	ASTARTE UNDATA	ASTARTE UNDATA
6110	ASTERIAS SP.	ASTERIAS SP.
6111	ASTERIAS VULGARIS	PURPLE STARFISH
6100	ASTEROIDEA S.C.	ASTEROIDEA S.C.
	ASTRONESTHES SP.(RICHARDSONI?)	DRAGONFISH,SCALED (NS)
521	ASTRONESTHES CYANEUS	A. CYANEUS

875	ASTRONESTHES GEMMIFER	A. GEMMIFER
522	ASTRONESTHES LEUCOPOGON	A. LEUCOPOGON
523	ASTRONESTHES NIGER	A. NIGER
524	ASTRONESTHES SIMILIS	A. SIMILIS
	ASTRONESTHIDAE	DRAGONFISHES,BIGHEAD
	ASTROSCOPUS GUTTATUS	NORTHERN STARGAZER
	ASTROSCOPUS Y-GRAECUM	SOUTHERN STATGAZER
6135	ASTROTECTEN DUPLICATUS	A. DUPLICATUS
669	ATHERINIDAE F.	ATHERINIDAE F.
	AULOSTOMUS MACULATUS	TRUMPERFISH
	AUXIS ROCHEI	BULLET MACKEREL
187	AUXIS THAZARD	FRIGATE MACKEREL
9410	AVES C.	G.LAND BIRD
2540	AXIIDAE F.	AXIIDAE F.
2541	AXIUS SERRATUS	AXIUS SERRATUS
	BAGRE MARINUS	GAFFTOPSAIL CATFISH
	BAIRDIELLA CHRYSOURA	SILVER PERCH
596	BAJACALIFORNIA MEGALOPS	BIGEYE SMOOTH-HEAD
2995	BALANIDAE F.	BALANIDAE F.
3	BALISTES CAPRISCUS	GRAY TRIGGERFISH
4	BALISTES VETULA	QUEEN TRIGGERFISH
	BALISTIDAE F.	TRIGGERFISHES (NS)
444	BASCANICHTHYS BASCANIUM	B. BASCANIUM
722	BATHOPHILUS METALLICUS	B. METALLICUS
525	BATHOPHILUS PROXIMUS	B. PROXIMUS
4337	BATHYARCA PECTUNCULOIDES	B. PECTUNCULOIDES
4339	BATHYARCA SP.	BATHYARCA SP.
581	BATHYCLUPEA ARGENTEA	B. ARGENTEA
	BATHYGOBIUS SOPORATOR	FRILLFIN GOBY
276	BATHYLAGIDAE F.	DEEPSEA SMELTS (NS)
526	BATHYLAGUS BERYCOIDES	B. BERYCOIDES
291	BATHYLAGUS COMPSUS	B. COMPSUS
176	BATHYLAGUS EURYOPS	GOITRE BLACKSMELT
347	BATHYLAGUS GREYAE	BATHYLAGUS GREYAE
295	BATHYLAGUS SP.	BATHYLAGUS
4524	BATHYPOLYPUS ARCTICUS	B. ARCTICUS
	BATHYPTEROIDAE F.	FEELERFISHES (NS)
148	BATHYPTEROIS DUBIUS	NOTCH FEELERFISH
863	BATHYPTEROIS QUADRIFILIS	B. QUADRIFILIS
	BATHYRAJA RICHARDSONI	SKATE,RICHARDSON'S
814	BATHYSAURUS FEROX	BATHYSAURUS FEROX
4581	BATHYTEUTHIDAE F.	BATHYTEUTHIDAE F.
	BATHYTROCTES SP.	HERRING,BLACK
219	BATOIDEA S.O.	SKATES AND RAYS (NS)
	BATRACHOIDIDAE F.	TOADFISHES (NS)
	BATRACHOIDIFORMES O.	TOADFISHES (NS)
	BELLATOR BRACHYCHIR	SHORTFIN SEAROBIN
	BELLATOR EGRETTA	STREAMER SEAROBIN
	BELLATOR MILITARIS	HORNED SEAROBIN
	BELONIFORMES (SYNENTOGNATHI) O.	FLYINGFISHES (NS)
	BEMBROPS GOBIOIDES	GOBY FLATHEAD
	BEMBROPS GOBIOIDES	GOBY FLATHEAD
527	BENTHALBELLA INFANS	B. INFANS
714	BENTHODESMUS ELONGATUS SIMONYI	FROSTFISH
528	BENTHODESMUS SP.	BENTHODESMUS SP.
824	BENTHODESMUS TENUIS	B. TENUIS
157	BENTHOSEMA GLACIALE	GLACIER LANTERNFISH
286	BENTHOSEMA SP.	BENTHOSEMA SP.
473	BENTHOSEMA SUBORBITALE	B. SUBORBITALE
8111	BEROE CUCUMIS	BEROE CUCUMIS
	BERYCIDAE	ALFONSINOS (NS)
802	BERYCIFORMES O.	BERYCOID FISH
775	BERYX DECADACTYLUS	ALFONSIN A CASTA LARGA
776	BERYX SPLENDENS	ALFONSIN A CASTA
4300	BIVALVIA C.	BIVALVIA C.
597	BLENNIIDAE SP.	BLENNIIDAE SP.
644	BLENNIOIDEI S.O.	BLENNIES,SHANNIES,GUNNELS
605	BLENNIOIDEI S.O.-OBSOLETE-	BLENNIES,SHANNIES,GUNNELS
	BODIANUS PULCHELLUS	SPOTFIN HOGFISH
529	BOLINICHTHYS INDICUS	B. INDICUS
292	BOLINICHTHYS PHOTOTHORAX	B. PHOTOTHORAX
866	BOLINICHTHYS SP.	BOLINICHTHYS SP.
462	BOLINICHTHYS SUPRALATERALIS	B. SUPRALATERALIS
4528	BOLITAENIDAE F.	BOLITAENIDAE F.
8317	BOLOCERA SP.	BOLOCERA SP.
1823	BOLTENIA SP.	SEA POTATO
22	BONAPARTIA PEDIOLOTA	B. PEDIOLOTA
2988	BOPYROIDES HIPPOLYTES	B. HIPPOLYTES
110	BOREOGADUS SAIDA	ARCTIC COD
2735	BOREOMYSIS TRIDENS	B. TRIDENS
	BOROSTOMIAS SP.	DRAGONFISH,BIGHEAD (NS)
716	BOROSTOMIAS ANTARCTICUS	STRAIGHTLINE DRAGONFISH
196	BOTHIDAE F.	LEFTEYE FLOUNDER
	BOTHUS LUNATUS	PEACOCK FLOUNDER
45	BOTHUS OCELLATUS	EYED FLOUNDER
	BOTHUS ROBINSI	TWOSPOT FLOUNDER
8	BOTHUS SP.	BOTHUS SP.
4583	BRACHIOTEUTHIS SP.	BRACHIOTEUTHIS SP.
2510	BRACHYURA S.	BRACHIURAN CRABS
3172	BRADA SP.	FLABELLIGERID WORMS
95	BRAMA BRAMA	ATLANTIC POMFRET
	BRAMIDAE	POMFRETS (NS)
	BRANCHIOSTEGIDAE	TILEFISHES (NS)
365	BREGMACEROS ATLANTICUS	B. ATLANTICUS
831	BREGMACEROS MACCLELLANDI	B. MACCLELLANDI
690	BREGMACEROS SP.	BREGMACEROS SP.
	BREVIRAJA PLUTONIA	SKATE (NS)
591	BREVIRAJA SPINOSA	BREVIRAJA SPINOSA
164	BREVOORTIA TYRANNUS	MENHADEN(ATLANTIC)
6413	BRISASTER FRAGILIS	HEART URCHIN
15	BROSME BROSME	CUSK
1235	BROSME BROSME EGGS	CUSK EGGS
354	BROSMICULUS IMBERBIS	B. IMBERBIS
940	BROTULA BARBATA	BEARDED BROTULA
	BROTULINAE	BROTULIDS (NS)
1930	BRYOZOANS BRACHIOPODA P.	LAMPSHELLS
1920	BRYOZOANS ECTOPROCTA P.	BRYOZOANS ECTOPROCTA
1900	BRYOZOANS P.	BRYOZOANS P.

1510	BUCCINIDAE EGGS	WHELK EGGS (NS)
4209	BUCCINIDAE F.	BUCCINIDAE F.
4212	BUCCINUM SCALARIFORME	SILKY BUCCINUM
4210	BUCCINUM SP.	WHELKS
4211	BUCCINUM UNDATUM	WAVE WHELK,COMMON EDIBLE
	BUSYCON CANALICULATUM	CHANNELED WHELK
	BUSYCON CARICA	KNOBBED WHELK
655	BYTHITIDAE F.	BYTHITIDAE F.
	CALAMUS BAJONADO	JOLTHEAD PORGY
	CALAMUS CALAMUS	SAUCEREYE PORGY
	CALAMUS LEUCOSTEUS	WHITEBONE PORGY
	CALAMUS NODOSUS	KNOBBED PORGY
	CALAMUS PENNA	SHEEPSHEAD PORGY
	CALAMUS PRORIDENS	LITTLEHEAD PORGY
2939	CALANOIDA O.	CALANOIDA O.
2911	CALANUS FINMARCHICUS	C. FINMARCHICUS
2912	CALANUS HYPERBOREUS	C. HYPERBOREUS
2910	CALANUS SP.	CALANUS SP.
2529	CALAPPA MEGALOPS	CALAPPA MEGALOPS
2508	CALAPPIDAE F.	CALAPPIDAE F.
2999	CALATHURA BRANCHIATA	ISOPOD
2943	CALIGUS SP.	CALIGUS SP.
446	CALLECHELYS MURAENA	C. MURAENA
	CALLECHELYS PERRYAE	SHORTTAIL SNAKE EEL
445	CALLECHELYS SP.	CALLECHELYS SP.
2512	CALLINECTES SAPIDUS	BLUE CRAB
635	CALLIONYMIDAE F.	DRAGONETS
637	CALLIONYMUS AGASSIZI	SPOTFIN DRAGONET
653	CALLIONYMUS BAIRDI	CORAL DRAGONET
658	CALLIONYMUS PAUCIRADIATUS	C. PAUCIRADIATUS
657	CALLIONYMUS SP.	CALLIONYMUS SP.
4259	CALLIOSTOMA OCCIDENTALE	C. OCCIDENTALE
2567	CALOCARIS MACANDREAE	C. MACANDREAE
2977	CAMPYLASPIS SP.	CAMPYLASPIS SP.
2511	CANCER BOREALIS	JONAH CRAB
2513	CANCER IRRORATUS	ATL ROCK CRAB
2524	CANCER SP.	CANCER SP.
2509	CANCRIDAE F.	CANCER CRAB (NS)
2915	CANDACIA ARMATA	CANDACIA ARMATA
2913	CANDACIA SP.	CANDACIA SP.
826	CANTHIDERMIS SUFFLAMEN	OCEAN TRIGGERFISH
	CANTHIGASTER ROSTRATA	SHARPNOSE PUFFER
3133	CAPITELLIDAE F.	CAPITELLIDAE F.
2871	CAPRELLA LINEARIS	CAPRELLA LINEARIS
2872	CAPRELLA SEPTENTRIONALIS	C. SEPTENTRIONALIS
2874	CAPRELLA SP.	CAPRELLA SP.
2870	CAPRELLIDAE F.	CAPRELLIDAE F.
	CAPROIDAE SP.	BOARFISH (NS)
174	CARANGIDAE	JACK
	CARANX BARTHOLOMAEI	YELLOW JACK
85	CARANX CRYSOS	BLUE RUNNER
86	CARANX HIPPOS	CREVALLE JACK
	CARANX LATUS	HORSE-EYE JACK
	CARANX RUBER	BAR JACK
960	CARANX SP.	CARANX SP.
	CARAPUS BERMUDENSIS	PEARLFISH
851	CARASSIUS AURATUS	CARASSIUS AURATUS
	CARCHARHINIDAE (GALEIDAE)	SHARKS,REQUIEM (NS)
	CARCHARHINUS SP.	SHARKS,REQUIEM (NS)
	CARCHARHINUS ACRONTUS	BLACKNOSE SHARK
	CARCHARHINUS ALTIMUS	BIGNOSE SHARK
	CARCHARHINUS BREVIPINNA	SPINNER SHARK
	CARCHARHINUS FALCIFORMIS	SILKY SHARK
	CARCHARHINUS ISODON	FINETOOTH SHARK
	CARCHARHINUS LEUCAS	BULL SHARK
965	CARCHARHINUS LIMBATUS	BALCKTIP SHARK
244	CARCHARHINUS LONGIMANUS	OCEANIC WHITETIP SHARK
245	CARCHARHINUS MILBERTI	SANDBAR SHARK
246	CARCHARHINUS OBSCURUS	DUSKY SHARK
	CARCHARHINUS POROSUS	SMALLTAIL SHARK
	CARCHARHINUS SIGNATUS	NIGHT SHARK
	CARCHARHINUS SPRINGERI	REEF SHARK
232	CARCHARODON CARCHARIAS	WHITE SHARK
2531	CARCINUS MAENAS	GREEN CRAB
4340	CARDIIDAE F.	COCKLES
4341	CARDIUM SP.	CARDIUM SP.
515	CAREPROCTUS SP.	SEASNAIL (NS)
507	CAREPROCTUS LONGIPINNIS	LONGFIN SEASNAIL
	CAREPROCTUS RANULAS	CAREPROCTUS RANULAS
520	CAREPROCTUS REINHARDI	SEA TADPOLE
3240	CARIDEA SO.	CARIDEA SO.
2318	CARIDION GORDONI	CARIDION GORDONI
	CARISTIIDAE	MANEFISHES (NS)
97	CARISTIUS GROENLANDICUS	GREENLAND MANEFISH
2813	CASCO BIGELOWI	CASCO BIGELOWI
	CATOSTOMIDAE	SUCKERS (NS)
	CATOSTOMUS CATOSTOMUS	SUCKER,LONGNOSE
	CATOSTOMUS COMMERSONI	SUCKER,WHITE
6717	CAUDINA ARENATA	CAUDINA ARENATA
	CAULOLATILUS CHRYSOPS	ATL GOLDENEYE TILEFISH
	CAULOLATILUS CYANOPS	BLACKLINE TILEFISH
	CAULOLATILUS INTERMEDIUS	GULF BAREYE TILEFISH
289	CAULOLATILUS SP.	CAULOLATILUS SP.
	CAULOLATULUS MICROPS	GREY TILEFISH
405	CAULOPHRYNE JORDANI	C. JORDANI
415	CAULOPHRYNIDAE F.	CAULOPHRYNIDAE
	CAVIAR	CAVIAR
124	CENTROBRANCHUS NIGRO-OCELLATUS	C. NIGRO-OCELLATUS
	CENTRODRACO ACANTHOPOMA	DRAGONET
	CENTROLOPHIDAE	RUFFS (NS)
787	CENTROLOPHUS NIGER	BLACK RUFF
2916	CENTROPAGES BRADYI	C. BRADYI
2914	CENTROPAGES SP.	C. SP.
2935	CENTROPAGES TYPICUS	C. TYPICUS
	CENTROPOMUS UNDECIMALIS	SNOOK
	CENTROPRISTIS OCYURUS	BANK SEA BASS
	CENTROPRISTIS PHILADELPHICA	SEA BASS,ROCK
121	CENTROPRISTIS STRIATA	SOUTHERN SEA BASS

221	CENTROSCYLLIUM FABRICII	BLACK DOGFISH
223	CENTROSCYMNUS COELOLEPIS	PORTUGUESE SHARK
4500	CEPHALOPODA C.	CEPHALOPODA C.
1530	CEPHALOPODA UNID. EGGS	SQUID EGGS
2821	CERADOCUS TORELLI	CERADOCUS TORELLI
4345	CERASTODERMA PINNULATUM	NORTHERN DWARF COCKLE
401	CERATIAS HOLBOELLI	DEEPSEA ANGLER
	CERATIIDAE F.	SEA DEVILS (NS)
687	CERATIOIDEI S.O.	CERATIOIDEI S.O.
163	CERATOSCOPELUS MADERENSIS	LANTERNFISH,HORNED
293	CERATOSCOPELUS SP.	CERATOSCOPELUS SP.
468	CERATOSCOPELUS WARMINGII	C. WARMINGII
8320	CERIANTHUS BOREALIS	C. BOREALIS
7700	CESTODA C.	CESTODA C.
	CETORHININAE	SHARKS,BASKING (NS)
233	CETORHINUS MAXIMUS	BASKING SHARK
761	CHAENOPHRYNE LONGICEPS	C. LONGICEPS
4720	CHAETODERMA SP.	CHAETODERMA SP.
	CHAETODIPTERUS FABER	ATL SPADEFISH
	CHAETODON ACULEATUS	LONGSNOUT BUTTERFLYFISH
	CHAETODON AYA	BANK BUTTERFLYFISH
	CHAETODON CAPISTRATUS	FOUREYE BUTTERFLYFISH
107	CHAETODON OCELLATUS	SPOTFIN BUTTERFLYFISH
	CHAETODON SEDENTARIUS	REEF BUTTERFLYFISH
578	CHAETODON SP.	CHAETODON SP.
	CHAETODON STRIATUS	BANDED BUTTERFLYFISH
328	CHAETODONTIDAE F.	BUTTERFLYFISHES (NS)
5000	CHAETOGNATHA P.	ARROW WORMS
	CHASCANOPSETTA LUGUBRIS	PELICAN FLOUNDER
	CHASMODES BOSQUIANUS	STRIPED BLENNY
	CHAULIODONTIDAE	VIPERFISHES (NS)
334	CHAULIODUS DANAE	CHAULIODUS DANAE
169	CHAULIODUS SLOANI	VIPERFISH
335	CHAULIODUS SP.	CHAULIODUS SP.
	CHAUNACIDAE	GAPERS (NS)
	CHAUNAX PICTUS	GAPER
530	CHAUNAX SP.	CHAUNAX SP.
9430	CHELONIA O.	TORTOISES AND SEA GOING TURTLES
39	CHIASMODON NIGER	BLACK SWALLOWER
	CHIASMODONTIDAE	SWALLOWERS (NS)
	CHILOMYCTERUS ANTILLARUM	WEB BURRFISH
	CHILOMYCTERUS ATINGA	SPOTTED BURRFISH
793	CHILOMYCTERUS SCHOEPFI	STRIPED BURRFISH
	CHIMAERA MONSTROSA	CHIMAERA
	CHIMAERIDAE	CHIMAERAS (NS)
	CHIMAERIFORMES (HOLOCEPHALI) O.	CHIMAERAS (NS)
2526	CHIONOECETES OPILIO	SNOW CRAB (QUEEN)
2522	CHIONOECETES SP. - OBSOLETE	SPIDER/(QUEEN,SNOW)UNID
6719	CHIRIDOTA LAEVIS	CHIRIDOTA LAEVIS
2997	CHIRIDOTEA SP.	CHIRIDOTEA SP.
2984	CHIRIDOTEA TUFTSI	CHIRIDOTEA TUFTSI
629	CHIROLOPHUS ASCANII	YARRELL'S BLENNY
392	CHIROSTOMIAS PLIOPTERUS	C. PLIOPTERUS
4566	CHIROTEUTHIDAE F.	CHIROTEUTHIDAE F.
4567	CHIROTEUTHIS SP.	CHIROTEUTHIS SP.
4322	CHLAMYS ISLANDICUS	ICELAND SCALLOP
481	CHLOPSIS BICOLOR	CHLOPSIS BICOLOR
369	CHLOPSIS SP.	CHLOPSIS SP.
593	CHLOROPHTHALAMIDAE	GREENEYES (NS)
156	CHLOROPHTHALMUS AGASSIZI	SHORT-NOSE GREENEYE
	CHLOROSCOMBRUS CHRYSURUS	ATLANTIC BUMPER
	CHONDRUS CRISPUS	IRISH MOSS
	CHONDRUS CRISPUS/FURCELLARIA	MIXED MOSS
3168	CHONE DUNERI	CHONE DUNERI
3221	CHONE SP.	CHONE SP.
	CHROMIS ENCHRYSURUS	YELLOWTAIL REEFFISH
	CHROMIS INSOLATUS	SUNSHINEFISH
	CHRONDROPHORA (NS)	SQUID (NS)
852	CHROSOMUS EOS	CHROSOMUS EOS
853	CHROSOMUS NEOGAEUS	CHROSOMUS NEOGAEUS
2998	CIROLANA POLITA	CIROLANA POLITA
2968	CIROLANA SP.	CIROLANA SP.
2991	CIROLANIDAE F.	CIROLANIDAE F.
3280	CIRRATULIDAE F.	CIRRATULIDAE F.
2990	CIRRIPEDIA S.C.	BARNACLES
44	CITHARICHTHYS ARCTIFRONS	GULF STREAM FLOUNDER
1250	CITHARICHTHYS ARCTIFRONS EGGS	GULF STREAM FLD EGGS
	CITHARICHTHYS ARENACEUS	SNAD WHIFF
387	CITHARICHTHYS CORNUTUS	HORNED WHIFF
388	CITHARICHTHYS GYMNORHINUS	C. GYMNORHINUS
	CITHARICHTHYS MACROPS	SPOTTED WHIFF
	CITHARICHTHYS SP.	WHIFF (NS)
	CITHARICHTHYS SPILOPTERUS	BAY WHIFF
2350	CLADOCERA O.	CLADOCERA O.
2899	CLAUSOCALANUS SP.	CLAUSOCALANUS SP.
2931	CLAVELLA SP.	CLAVELLA SP.
	CLEPTICUS PARRAI	CREOLE WRASSE
	CLINIDAE SP.	CLINID (NS)
4342	CLINOCARDIUM CILIATUM	ICELAND COCKLE
4611	CLIONE LIMACINA	CLIONE LIMACINA
60	CLUPEA HARENGUS	HERRING(ATLANTIC)
1221	CLUPEA HARENGUS EGGS	HERRING EGGS
336	CLUPEIDAE F.	HERRING (NS)
290	CLUPEIDAE/OSMERIDAE F.	HERRING/CAPELIN LIKE
	CLUPEIFORMES (ISOSPONDYLI) O.	FISHES,HERRING LIKE
6500	CLYPEASTEROIDA O.	SAND DOLLARS
533	COCCORELLA ATLANTICA	C. ATLANTICA
	COD LIVERS	COD LIVERS
1237	COD/HADDOCK EGGS	COD/HADDOCK EGGS
1242	COD/HADDOCK/WITCH EGGS	COD/HADDOCK/WITCH EGGS
8200	COELENTERATA P.	COELENTERATA P.
413	COELORHYNCHUS CARMINATUS	LONGNOSE GRENADIER
4228	COLUS SP.	SPINDLE SHELL
608	CONGER OCEANICUS	CONGER EEL
431	CONGER SP.	CONGER SP.
429	CONGRIDAE F.	EELS,CONGER
749	CONOCARA SALMONEA	SLICKHEAD
7113	CONTRACAECUM SP.	CONTRACAECUM SP.

78	COOKEOLUS BOOPS	BULLEYE
2900	COPEPODA S.C.	COPEPODA S.C.
2901	COPEPODA S.C.,LARGE	COPEPODS MORE THAN 3 MM
2902	COPEPODA S.C.,SMALL	COPEPODS 3 MM OR LESS
1309	COPEPODA, EGGS	COPEPODA, EGGS
2938	COPEPODA,NAUPLII	COPEPODA,NAUPLII
67	COREGONUS CANADENSIS	ATL WHITEFISH
66	COREGONUS CLUPEAFORMIS	LAKE WHITEFISH
	CORNIGER SPINOSUS	SPINYCHEEK SOLDIERFISH
2840	COROPHIIDAE F.	COROPHIIDAE F.
585	CORYPHAENA EQUISELIS	C. EQUISELIS
	CORYPHAENA EQUISETIS	POMPANO DOLPHIN
747	CORYPHAENA HIPPURUS	DOLPHIN(COMMON)
	CORYPHAENIDAE	DOLPHINS (NS)
414	CORYPHAENOIDES RUPESTRIS	ROCK GRENADIER(ROUNDNOSE)
	COSMOCAMPUS ALBIROSTRIS	WHITENOSE PIPEFISH
312	COTTIDAE F.	SCULPINS
311	COTTIDAE F. UNID.	SCULPIN UNIDENTIFIED
	COTTUNCULUS SP.	SCULPIN,DEEP SEA
307	COTTUNCULUS MICROPS	POLAR SCULPIN
308	COTTUNCULUS THOMPSONI	PALLID SCULPIN
	COTTUS SP.	MUDDLER (NS)
	COTTUS BAIRDI	MUDDLER,MOTTLED
	COTTUS COGNATUS	MUDDLER,COMMON SLIMY
854	COUESIUS PLUMBEUS	CHUB,LAKE
1314	CRAB EGGS	CRAB EGGS
1313	CRAGONID EGGS	CRAGONID EGGS
4587	CRANCHIA SP.	CRANCHIA SP.
4585	CRANCHIIDAE F.	CRANCHIIDAE F.
4586	CRANCHIINAE S.F.	CRANCHIINAE S.F.
2417	CRANGON SEPTEMSPINOSA	C. SEPTEMSPINOSA
2416	CRANGON SP.	CRANGON SP.
2400	CRANGONIDAE F.	CRANGONIDAE F.
4326	CRASSOSTREA VIRGINICA	AMERICAN CUPPED OYSTER
6900	CRINOIDEA C.	SEA LILIES
5201	CRUCIBULUM STRIATUM	CUP AND SAUCER LIMPET
2000	CRUSTACEA C.	CRUSTACEA C.
1300	CRUSTACEA EGGS	CRUSTACEAN EGGS
2001	CRUSTACEA LARVAE	CRUSTACEA LARVAE
630	CRYPTACANTHODES MACULATUS	WRYMOUTH
402	CRYPTOPSARAS COUESI	LESSER DEEPSEA ANGLER
	CRYPTOTOMUS ROSEUS	BLUELIP PARROTFISH
6115	CTENODISCUS CRISPATUS	MUD STAR
8100	CTENOPHORA P.	COMB JELLIES
8000	CTENOPHORES,COELENTERATES,PORIFERA	CTENOPHORES,ETC.
4582	CTENOPTERYX SP.	CTENOPTERYX SP.
	CUBICEPS ATHENAE	BIGEYE CIGARFISH
534	CUBICEPS CAPENSIS	CUBICEPS CAPENSIS
532	CUBICEPS GRACILIS	CUBICEPS GRACILIS
820	CUBICEPS PAUCIRADIATUS	C. PAUCIRADIATUS
531	CUBICEPS SP.	CUBICEPS SP.
6611	CUCUMARIA FRONDOSA	CUCUMARIA FRONDOSA
	CULAEA (EUCALIA) INCONSTANS	STICKLEBACK,BROOK
2970	CUMACEA O.	CUMACEA O.
1244	CUNNER/YELLOWTAIL EGGS	CUNNER/YELLOWTAIL EGGS
1243	CUSK/MACKEREL EGGS	CUSK/MACKEREL EGGS
4306	CUSPIDARIA GLACIALIS	GLACIER DIPPER SHELL
8511	CYANEA CAPILLATA	PINK JELLYFISH
2945	CYCLOPOIDA O.	CYCLOPOIDA O.
345	CYCLOPSETTA FIMBRIATA	SPOTFIN FLOUNDER
379	CYCLOPSETTA SP.	CYCLOPSETTA SP.
514	CYCLOPTERIDAE INCLUDES LIPARIDAE	LUMPFISH,SEASNAIL(NS)
	CYCLOPTEROPSIS MACALPINI	LUMPFISH,ARCTIC
501	CYCLOPTERUS LUMPUS	LUMPFISH
1225	CYCLOPTERUS LUMPUS EGGS	LUMPFISH EGGS
696	CYCLOTHONE ACCLINIDENS	C. ACCLINIDENS
753	CYCLOTHONE ALBA	ALBINO ANGLEMOUTH
754	CYCLOTHONE BRAUERI	BRAUERS ANGLEMOUTH
154	CYCLOTHONE MICRODON	VEILED ANGLE MOUTH
322	CYCLOTHONE PSEUDOPALLIDA	C. PSEUDOPALLIDA
755	CYCLOTHONE SP.	ANGLEMOUTH (NS)
4257	CYLICHNA ALBA	CYLICHNA ALBA
4430	CYLICHNIDAE F.	CANOE SHELLS
	CYNOSCION ARENARIUS	SAND SEAD SEATROUT
271	CYNOSCION NEBULOSUS	SPOTTED WEAKFISH
	CYNOSCION NOTHUS	SILVER SEATROUT
103	CYNOSCION REGALIS	WEAKFISH
	CYPRINIDAE	MINNOWS (NS)
	CYPRINIFORMES (EVENTOGNATHI) O.	MINNOWS,SUCKERS,ETC.
	CYPRINODONTIDAE	KILLIFISHES (NS)
	CYPRINODONTIFORMES O.	TOPMINNOWS
	CYPRIODON VARIEGATUS	SHEEPSHEAD MINNOW
	CYPSELURUS SP.	FLYINGFISH (NS)
	CYPSELURUS CYANOPTERUS	MARGINED FLYINGFISH
734	CYPSELURUS FURCATUS	SPOTFIN FLYINGFISH
735	CYPSELURUS HETERURUS	ATL FLYINGFISH
4312	CYRTODARIA SILIQUA	BANK CLAM
4327	CYRTODARIA SP.	CYRTODARIA SP.
595	CYTTUS ROSEUS	RED DORY
	DACTYLOBATUS ARMATUS	SKATE (NS)
	DACTYLOPTERIDAE	FLYING GURNARDS (NS)
	DACTYLOPTERIFORMES O.	FLYING GURNARDS (NS)
806	DACTYLOPTERUS VOLITANS	FLYING GURNARD
	DALATIIDAE	SHARKS,SLEEPER (NS)
	DASYATIDAE (TRYGONIDAE)	STINGRAYS (NS)
	DASYATIDAE MYLIOBATIDAE SP.	RAY (NS)
	DASYATIS AMERICANA	STINGRAY,SOUTHERN
213	DASYATIS CENTROURA	ROUGHTAIL STINGRAY
	DASYATIS SABINA	ATLANTIC STINGRAY
	DASYATIS SAYI	BLUNTNOSE STRINGRAY
218	DASYATIS VIOLACEA	PELAGIC STINGRAY
1310	DECAPODA EGGS	DECAPOD EGGS
2010	DECAPODA LARVAE	DECAPODA LARVAE
2100	DECAPODA O.	SHRIMPS
87	DECAPTERUS MACARELLUS	MACKEREL SCAD
80	DECAPTERUS PUNCTATUS	ROUND SCAD
377	DECAPTERUS SP.	DECAPTERUS SP.
	DECODON PUELLARIS	RED HOGFISH

1822	DENDRODOA SP.	DENDRODOA SP.	3108	DRILONEREIS MAGNA	ARABELLID THREAD WORM
4410	DENDRONOTUS SP.	BUSHY BACKSLUG	6716	DUASMODACTYLA COMMUNE	D. COMMUNE
	DERICHTHYIDAE (NESSORHAMPHINAE)	EELS, LONGNECK (NS)	2818	DULICHIA MONACANTHA	D. MONACANTHA
612	DERICHTHYS SERPENTINUS	D. SERPENTINUS	2827	DULICHIA SP.	DULICHIA SP.
	DERMATOLEPIS EPINEPHELUSINERMIS	MARBLED GROUPER		DULSE(PALMARIA PALMATA)	DULSE(PALMARIA PALMATA)
453	DIAPHUS BERTELSENI	DIAPHUS BERTELSENI	8324	DUVA MULTIFLORA	SEA CAULIFLOWER
428	DIAPHUS BRACHYCEPHALUS	D. BRACHYCEPHALUS	459	DYSOMMA SP.	DYSOMMA SP.
152	DIAPHUS DUMERILII	LANTERNFISH	458	DYSOMMINAE S.F.	DYSOMMINAE S.F.
125	DIAPHUS EFFULGENS	DIAPHUS EFFULGENS		ECHENEIDAE	REMORAS/SHARKSUCKERS
535	DIAPHUS FRAGILIS	DIAPHUS FRAGILIS	82	ECHENEIS NAUCRATES	SHARKSUCKER
424	DIAPHUS GARMANI	DIAPHUS GARMANI	6511	ECHINARACHNIUS PARMA	E. PARMA
536	DIAPHUS HOLTI	DIAPHUS HOLTI	6801	ECHINOCARDIUM CORDATUM	E. CORDATUM
423	DIAPHUS LUCIDUS	DIAPHUS LUCIDUS	6000	ECHINODERMATA P.	SPINY SKINNED ANIMALS
127	DIAPHUS LUETKENI	DIAPHUS LUETKENI	6397	ECHINOIDEA C.	SAND DOLLARS,URCHINS (NS)
168	DIAPHUS METOPOCLAMPUS	HEADLIGHT FISH	6397	ECHINOIDEA C.	SAND DOLLARS,URCHINS (NS)
128	DIAPHUS MOLLIS	DIAPHUS MOLLIS	37	ECHIODON DAWSONI	PEARLFISH,CHAIN
126	DIAPHUS PERSPICILLATUS	D. PERSPICILLATUS		ECHIOPHIS INTERTINCTUS	EEL,SPOTTED SPOONNOSED
129	DIAPHUS RAFINESQUII	D. RAFINESQUII		ECHIOPHIS PUNCTIFER	STRIPPLED SPOON-NOSE EEL
537	DIAPHUS ROEI	DIAPHUS ROEI	447	ECHIOPHIS SP.	ECHIOPHIS SP.
229	DIAPHUS SP.	DIAPHUS SP.		ECHIOSTOMA SP.	DRAGONFISH,SMOOTH(NS)
439	DIAPHUS SPLENDIDUS	D. SPLENDIDUS	541	ECHIOSTOMA BARBATUM	E. BARBATUM
540	DIAPHUS TAANINGI	DIAPHUS TAANINGI	3330	ECHIURIDA P.	ECHIURIDA P.
130	DIAPHUS TERMOPHILUS	D. TERMOPHILUS	3340	ECHIURIDAE F.	ECHIURIDAE F.
2973	DIASTYLIS POLITA	DIASTYLIS POLITA	3311	ECHIURUS ECHIURUS	ECHIURUS ECHIURUS
2978	DIASTYLIS QUADRISPINOSA	D. QUADRISPINOSA	2989	EDOTEA TRILOBA	BROWN ISOPOD
2972	DIASTYLIS RATHKEI	DIASTYLIS RATHKEI	4596	EGEA SP.	EGEA SP.
2971	DIASTYLIS SP.	DIASTYLIS SP.	1100	EGGS UNID.	EGGS UNID.
742	DIBRANCHUS ATLANTICUS	ATLANTIC BATFISH		ELAGATIS BIPINNULATA	RAINBOW RUNNER
2214	DICHELOPANDALUS LEPTOCERUS	D. LEPTOCERUS	131	ELECTRONA RISSOI	ELECTRONA RISSOI
2215	DICHELOPANDALUS SP.	DICHELOPANDALUS SP.		ELOPIDAE	TARPONS (NS)
862	DICROLENE INTRONIGRA	D. INTRONIGRA	349	ELOPS SAURUS	LADYFISH
367	DIODON HOLOCANTHUS	BALLONFISH	9999	EMPTY	EMPTY
	DIODON HYSTRIX	PORCUPINEFISH	114	ENCHELYOPUS CIMBRIUS	FOURBEARD ROCKLING
692	DIODONTIDAE F.	PORCUPINEFISHES (NS)	1229	ENCHELYOPUS CIMBRIUS EGGS	F.B. ROCKLING EGGS
466	DIOGENICHTHYS ATLANTICUS	D. ATLANTICUS	195	ENCHELYOPUS/UROPHYCIS SP.	ROCKLING HAKE
	DIOGENIDAE PAGURIDAE SP.	HERMIT CRAB (NS)	34	ENGRAULIDAE F.	ANCHOVIES
	DIPLECTRUM BIVITTATUM	DWARF SAND PERCH	9	ENGRAULIS EURYSTOLE	SILVER ANCHOVY
695	DIPLECTRUM FORMOSUM	SAND PERCH	325	ENGYOPHRYS SENTA	ENGYOPHRYS SENTA
663	DIPLECTRUM SP.	DIPLECTRUM SP.	4545	ENOPLOTEUTHIDAE F.	ENOPLOTEUTHIDAE F.
3174	DIPLOCIRRUS HIRSUTUS	FLABELLIGERID WORM	4546	ENOPLOTEUTHINAE S.F.	ENOPLOTEUTHINAE S.F.
	DIPLODUS ARGENTEUS	SILVER PORGY	4548	ENOPLOTEUTHIS ANAPSIS	E. ANAPSIS
	DIPLODUS HOLBROOKI	SPOTTAIL PINFISH	4549	ENOPLOTEUTHIS LEPTURA	E. LEPTURA
538	DIPLOPHUS TAENIA	DIPLOPHUS TAENIA	4547	ENOPLOTEUTHIS SP.	ENOPLOTEUTHIS SP.
6131	DIPLOPTERASTER MULTIPES	D. MULTIPES	4301	ENSIS DIRECTUS	RAZOR SHELL CLAM
359	DIPLOSPINUS MULTISTRIATUS	D. MULTISTRIATUS	1910	ENTOPROCTA P.	ENTOPROCTA P.
9406	DIPTERA O.	DIPTERA O.	677	EPIGONUS DENTICULATUS	E. DENTICULATUS
	DIRETMIDAE	SPINYFINS (NS)	582	EPIGONUS OCCIDENTALIS	E. OCCIDENTALIS
772	DIRETMUS ARGENTEUS	SPINYFIN	587	EPIGONUS PANDIONIS	E. PANDIONIS
539	DOLICHOPTERYX BINOCULARIS	D. BINOCULARIS	878	EPIGONUS SP.	EPIGONUS SP.
762	DOLOPICHTHYS ALLECTOR	D. ALLECTOR		EPINEPHELUS ADSCENSIONIS	ROCK HIND
	DORMITATOR MACULATUS	FAT SLEEPER		EPINEPHELUS AFER	MUTTON HAMLET
262	DOROSOMA CEPEDIANUM	GIZZARD SHAD		EPINEPHELUS DRUMMONDHAYI	SPECKLED HIND
496	DRACONETTA ACANTHOPOMA	D. ACANTHOPOMA		EPINEPHELUS GUTTATUS	RED HIND
	DRACONETTIDAE	DRAGONETS (NS)	879	EPINEPHELUS MORIO	GROUPER,RED

	EPINEPHELUS MYSTACINUS	MISTY GROUPER
	EPINEPHELUS NIGRITUS	WARSAW GROUPER
698	EPINEPHELUS NIVEATUS	SNOWY GROUPER
	EPINEPHELUS STRIATUS	NASSAU GROUPER
	EPINEPHILUS FLAVOLIMBATUS	YELLOWEDGE GROUPER
4240	EPITONIUM SP.	EPITONIUM
8321	EPIZOANTHUS INCRUSTATUS	E. INCRUSTATUS
	EQUETUS ACUMINATUS	HIGH-HAT
	EQUETUS LANCEOLATUS	JACKKNIFE-FISH
	EQUETUS PUNCTATUS	SPOTTED DRUM
	EQUETUS UMBROSUS	CUBBYU
2536	ERICHTHONIUS RUBRICORNIS	E. RUBRICORNIS
2731	ERYTHROPS ERYTHROPTHALMA	E. ERYTHROPTHALMA
	ESOCIDAE	PIKES (NS)
	ESOX LUCIUS	PIKE,NORTHERN
	ESOX SP.	PICKEREL,PIKE,JACKFISH
3112	ETEONE SP.	PADDLE WORMS
3113	ETEONE TRILINEATA	PADDLE WORM
224	ETMOPTERUS PRINCEPS	ROUGH SAGRE
	ETMOPTERUS SPINAX	DOGFISH (NS)
344	ETROPUS CROSSOTUS	FRINGED FLOUNDER
386	ETROPUS MICROSTOMUS	SMALLMOUTH FLOUNDER
	ETROPUS RIMOSUS	GRAY FLOUNDER
	ETROPUS SP.	ETROPUS (NS)
834	ETRUMEUS SADINA	ETRUMEUS SADINA
166	ETRUMEUS TERES	ROUND HERRING
2332	EUALUS FABRICII	EUALUS FABRICII
2333	EUALUS GAIMARDII	EUALUS GAIMARDII
2331	EUALUS MACILENTUS	EUALUS MACILENTUS
2317	EUALUS PUSIOLUS	EUALUS PUSIOLUS
2330	EUALUS SP.	EUALUS SP.
2921	EUCHAETA NORVEGICA	E. NORVEGICA
2922	EUCHIRELLA SP.	EUCHIRELLA SP.
3222	EUCHONE SP.	EUCHONE SP.
	EUCINOSTOMUS ARGENTEUS	SPOTFIN MOJARRA
	EUCINOSTOMUS GULA	SILVER JENNY
2976	EUDORELLA EMARGINATA	E. EMARGINATA
2979	EUDORELLA PUSILLA	E. PUSILLA
2965	EUDORELLA SP.	EUDORELLA SP.
2966	EUDORELLA TRUNCATULA	E. TRUNCATULA
	EULEPTORHAMPHUS VELOX	FLYING HALFBEAK
	EUMECICHTHYS FISKI	UNICORNFISH
626	EUMESOGRAMMUS PRAECISUS	4-LINE SNAKE BLENNY
	EUMICROTREMUS SP.	LUMPFISH (NS)
509	EUMICROTREMUS DERJUGINI	ATHERFIN LUMPSUCKER
	EUMICROTREMUS SPINOSUS VARIABILIS	SPINY LUMPSUCKER
502	EUMICROTREMUS SPINOSUS	ATL SPINY LUMPSUCKER
	EUMICROTREMUS TERRAENOVAE	LUMPFISH,NEWFOUNDLAND
3109	EUNICE PENNATA	EUNICE PENNATA
3085	EUNICIDAE F.	EUNICIDAE F.
2613	EUPHAUSIA KROHNI	EUPHAUSIA KROHNI
2612	EUPHAUSIA SP.	EUPHAUSIA SP.
2600	EUPHAUSIACEA O.	KRILL SHRIMP
2699	EUPHAUSIACEA/MYSIDACEA O.	EUPAUSIIDS (NS)
2610	EUPHAUSIIDAE F.	EUPHAUSIIDAE F.
	EURYPHARANGIDAE	GULPERS (NS)
614	EURYPHARYNX PELECANOIDES	PELICAN GULPER
542	EUSTOMIAS BIBULBOSUS	E. BIBULBOSUS
393	EUSTOMIAS BIGELOWI	EUSTOMIAS BIGELOWI
543	EUSTOMIAS DUBIUS	EUSTOMIAS DUBIUS
544	EUSTOMIAS FILIFER	EUSTOMIAS FILIFER
670	EUSTOMIAS FISSIBARBIS	E. FISSIBARBIS
394	EUSTOMIAS LIPOCHIRUS	E. LIPOCHIRUS
545	EUSTOMIAS OBSCURUS	E. OBSCURUS
546	EUSTOMIAS SCHMIDTI	E. SCHMIDTI
547	EUSTOMIAS TETRANEMA	E. TETRANEMA
815	EUTAENIOPHORUS SP.	EUTAENIOPHORUS SP.
173	EUTHYNNUS ALLETTERATUS	FALSE ALBACORE
172	EUTHYNNUS PELAMIS	STRIPED BONITO/SKIPJACK
2352	EVADNE SP.	EVADNE SP.
383	EVERMANELLA BALBOA	E. BALBOA
488	EVERMANELLA INDICA	E. INDICA
733	EVERMANNELLA SP.	EVERMANNELLA SP.
748	EXOCOETIDAE F.	FLYING FISH(UNIDENTIFIED)
	EXOCOETUS OBTUSIROSTRIS	OCEANIC TWO-WING FLYINGFISH
3187	EXOGONE SP.	EXOGONE SP.
3128	EXOGONE VERUGERA	EXOGONE VERUGERA
659	FACCIOLELLA SP.	FACCIOLELLA SP.
100	FINFISHES (NS)	FINFISHES (NS)
1200	FISH EGGS-UNIDENTIFIED	FISH EGGS-UNIDENTIFIED
	FISH SKINS	FISH SKINS
4253	FISSURELLIDAE F.	KEYHOLE LIMPID
	FISTULARIA PETIMBA	RED CORNETFISH
	FISTULARIA SP.	CORNETFISH (NS)
780	FISTULARIA TABACARIA	BLUESPOTTED CORNETFISH
	FISTULARIIDAE	CORNETFISHES (NS)
3170	FLABELLIGERIDA F.	FLABELLIGERIDA F.
391	FLAGELLOSTOMIAS BOUREEI	F. BOUREEI
	FLOUNDER (NS)	FLOUNDER (NS)
1700	FORAMINIFERA O.	FORAMINIFERA
9400	FOREIGN ARTICLES,GARBAGE	FOREIGN ARTICLES,GARBAGE
9301	FUCUS SP.	BROWN ROCKWEED
	FUNDULUS SP.	KILLIFISH (NS)
738	FUNDULUS DIAPHANUS	BANDED KILLIFISH
769	FUNDULUS HETEROCLITUS	MUMMICHOG
	FUNDULUS MAJALIS	STRIPED KILLIFISH
	FURCELLARIA FASTIGIATA	WIRE WEED/HORSETAIL
	GADELLA MARALDI	URALEPTUS MARALDI
251	GADIDAE F.	GADOIDS (COD)
1210	GADIDAE F. EGGS	COD FAMILY
	GADIFORMES (ANACANTHINI) O.	CODS,HAKES,ETC.
101	GADOIDEI S.O.	GADOIDS
	GADUS SP.	COD(NS)
10	GADUS MORHUA	COD(ATLANTIC)
1211	GADUS MORHUA EGGS	COD EGGS
118	GADUS OGAC	GREENLAND COD
116	GAIDROPSARUS ARGENTATUS	SILVER ROCKLING
115	GAIDROPSARUS ENSIS	THREEBEARD ROCKLING

119	GAIDROPSARUS SP.	ROCKLING UNIDENTIFIED	155	GONOSTOMA ELONGATUM	LONGTOOTH ANGLEMOUTH
	GALATHEID SP.	GALATHEID SP.	1260	GONOSTOMATIDAE EGGS	GONOSTOMATIDAE EGGS
2554	GALATHEIDAE F.	GALATHEIDAE F.	745	GONOSTOMATIDAE F. (NS)	ANGLEMOUTH
	GALEOCERDO CUVIERI	SHARK,TIGER	838	GORDIICHTHYS LEIBYI	G. LEIBYI
4593	GALITEUTHIS SP.	GALITEUTHIS SP.	6309	GORGONOCEPHALIDA F.	GORGONOCEPHALIDA F.
2811	GAMMARIDAE F.	GAMMARIDAE F.	6300	GORGONOCEPHALIDAE,ASTERONYCHIDAE F	BASKET STARS
2819	GAMMARIDEA S.O.	WHITE,G. AMPHI	6310	GORGONOCEPHALUS SP.	GORGONOCEPHALUS SP.
2859	GAMMAROPSIS MACULATUS	G. MACULATUS	717	GRAMMATOSTOMIAS DENTATUS	TORPEDO DRAGONFISH
2820	GAMMARUS SP.	GAMMARUS SP.		GRAMMICOLEPIDAE	DIAMOND DORIES (NS)
1511	GASTEROPODA EGGS	SNAIL/SLUG EGGS		GRAMMIDAE SP.	BASSLET (NS)
360	GASTEROSTEIDAE F.	STICKLEBACK UNIDENTIFIED	253	GROUNDFISH (NS)	GROUNDFISH (NS)
	GASTEROSTEIFORMES O.	STICKLEBACKS (NS)		GYMNACHIRUS MELAS	NAKED SOLE
	GASTEROSTEUS SP.	STICKLEBACK (NS)	616	GYMNELIS VIRIDIS	FISH DOCTOR
361	GASTEROSTEUS ACULEATUS	THREESPINE STICKLEBACK	302	GYMNOCANTHUS TRICUSPIS	ARCTIC STAGHORN SCULPIN
364	GASTEROSTEUS WHEATLANDI	BLACKSPOTTED STICKLEBACK	606	GYMNOTHORAX FUNEBRIS	GREEN MORAY
4200	GASTROPODA O.	SNAILS AND SLUGS		GYMNOTHORAX MORINGA	MORAY,SPOTTED
	GASTROPSETTA FRONTALIS	SHRIMP FLOUNDER		GYMNOTHORAX NIGROMARGINATUS	BLACKEDGE MORAY
3502	GATTYANA SP.	GATTYANA SP.		GYMNOTHORAX SAXICOLA	OCELLATED MORAY
296	GEMPYLIDAE F.	SNAKE MACKERELS (NS)	427	GYMNOTHORAX SP.	GYMNOTHORAX SP.
	GEMPYLUS SERPENS	SNAKE MACKEREL		GYMNURA ALTAVELA	SPINY BUTTERFLY RAY
3300	GEPHYREA (SIPUNCULA) P.	G. (SIPUNCULA)		GYMNURA MICRURA	RAY,SMOOTH BUTTERFLY
773	GEPHYROBERYX DARWINI	G. DARWINI	1236	H4B EGGS	HAKE/4BROCK/BUTTERFISH/WINDOWPANE
420	GERREIDAE F.	MOJARRA (NS)		HAEMULON AUROLINEATUM	TOMTATE
	GERYON AFFINIS	WHITE CRAB		HAEMULON CARBONARIUM	CAESAR GRUNT
2532	GERYON QUINQUEDENS	DEEP SEA RED CRAB		HAEMULON PLUMIERI	WHITE GRUNT
0000	GIGANTACTINIDAE	F. GIGANTACTINIDAE		HAEMULON STRIATUM	STRIPED GRUNT
418	GIGANTACTIS SP.	GIGANTACTIS	18	HAKE UNID.	HAKE (NS)
867	GIGANTACTIS VANHOEFFENI	G. VANHOEFFENI	109	HALARGYREUS JOHNSONII	DAINTY MORA
	GIGARTINA STELLATA	FUNDY MOSS	109	HALARGYREUS JOHNSONII	DAINTY MORA
	GINGLYMOSTOMA CIRRATUM	NURSE SHARK		HALIBUT LIVERS	HALIBUT LIVERS
921	GLOBICEPHALA MELAENA	ATL PILOT WHALE		HALICHOERES BATHPHILUS	GREENBAND WRASSE
	GLOSSANODON PYGMAEUS	PYGMY ARGENTINE		HALICHOERES BIVITTATUS	SLIPPERY DICK
378	GLOSSANODON SP.	GLOSSANODON SP.		HALICHOERES CAUSALIS	PAINTED WRASSE
3551	GLYCERA CAPITATA	BLOOD WORM		HALICHOERES POEYI	BLACKEAR WRASSE
3550	GLYCERA SP.	BLOOD WORMS		HALICHOERES RADIATUS	PUDDINGWIFE
3230	GLYCERIDAE F.	GLYCERIDAE F.	8621	HALICLONA OCULATA	EYED SPONGE
41	GLYPTOCEPHALUS CYNOGLOSSUS	WITCH FLOUNDER	8618	HALICLONA SP.	HALICLONA SP.
1227	GLYPTOCEPHALUS CYNOGLOSSUS EGGS	WITCH EGGS	844	HALIEUTICHTHYS ACULEATUS	BATFISH,SPINY
	GNATHAGNUS EGREGIUS	FRECKLED STARGAZER	2876	HALIRAGOIDES INERMIS	H. INERMIS
2993	GNATHIA CERINA	GNATHIA CERINA	1827	HALOCYNTHIA PYRIFORMIS	SEA PEACH
	GOBIESOX STRUMOSUS	SKILLETFISH	490	HALOSAURIDAE F.	HALOSAURUS (NS)
804	GOBIIDAE F.	GOBIES,UNIDENTIFIED		HALOSAUROIDEI	HALOSAURUS (NS)
	GOBIOSOMA BOSCI	NAKED GOBY	2856	HAPLOOPS LAEVIS	HAPLOOPS LAEVIS
4568	GONATIDAE F.	GONATIDAE F.		HARENGULA JAGUANA	SCALED SARDINE
4569	GONATUS SP.	GONATUS SP.	2862	HARPINIA CRENULATA	H. CRENULATA
3120	GONIADA MACULATA	GONIADA MACULATA	2849	HARPINIA PROPINQUA	H. PROPINQUA
3127	GONIADA NORVEGICA	GONIADA NORVEGICA	2852	HARPINIA SP.	HARPINIA SP.
3121	GONIADA SP.	CHEVRON WORMS	247	HARRIOTTA RALEIGHANA	LONGNOSE CHIMERA
3124	GONIADIDAE F.	GONIADIDAE F.	2894	HAUSTORIIDAE	HAUSTORIIDAE
132	GONICHTHYS COCCOI	COCCO'S LANTERNFISH	6711	HAVELOCKIA SCABRA	HAVELOCKIA SCABRA
548	GONOSTOMA SP.	ANGLEMOUTHS (NS)	4594	HELICOCRANCHIA SP.	HELICOCRANCHIA SP.
	GONOSTOMA ATLANTICUM	G. ATLANTICUM	123	HELICOLENUS DACTYLOPTERUS	ROSEFISH(BLACK BELLY)
	GONOSTOMA BATHYPHILUM	G. BATHPHILUM	2875	HELIRAGES FULVOCINCTUS	H. FULVOCINCTUS
	GONOSTOMA DENUDATUM	ANGLEMOUTH (NS)		HEMANTHIAS AUREORUBENS	STREAMER BASS

374	HEMANTHIAS SP.	HEMANTHIAS SP.	380	HOLOCANTHUS SP.	HOLOCANTHUS SP.
661	HEMANTHIAS VIVANUS	RED BARBIER		HOLOCENTRIDAE SP.	SQUIRRELFISH (NS)
	HEMICARANX AMBLYRHYNCHUS	BLUNTNOSE JACK		HOLOCENTRUS ASCENSIONIS	SQUIRRELFISH
	HEMIPTERONOTUS NOVACULA	PEARLY RAZORFISH		HOLOCENTRUS BULLISI	DEEPWATER SQUIRRELFISH
371	HEMIPTERONOTUS SP.	HEMIPTERONOTUS SP.		HOLOCENTRUS RUFUS	LONGSPINE SQUIRRELFISH
	HEMIRAMPHIDAE	HALFBEAKS (NS)		HOLOCENTRUS VEXILLARIUS	DUSKY SQUIRRELFISH
678	HEMIRAMPHUS BRASILIENSIS	BALLYHOO	6600	HOLOTHUROIDEA C.	SEA CUCUMBERS
320	HEMITRIPTERUS AMERICANUS	SEA RAVEN	2550	HOMARUS AMERICANUS	AMERICAN LOBSTER
6119	HENRICIA SANGUINOLENTA	BLOOD STAR	2551	HOMARUS AMERICANUS LARVAE	LOBSTER LARVAE
	HEPTRANCHIAS PERLO	SHARK, SEVEN GILLED		HOPLOSTETHUS SP.	SLIMEHEAD
1316	HERMIT CRAB EGGS	HERMIT EGGS		HOPLOSTETHUS MEDITERRANEUS	BLACKMOUTHED ALFONSIN
	HERRING SCALES	HERRING SCALES		HOPLOSTETHUS OCCIDENTALIS	H. OCCIDENTALIS
3195	HESIONIDAE F.	HESIONIDAE F.	477	HOPLUNNIS SP.	HOPLUNNIS SP.
417	HETEROPHOTUS SP.	HETEROPHOTUS SP.	8316	HORMATHIA SP.	HORMATHIA SP.
3601	HETEROPODA	PELAGIC SEA SNAIL	8622	HORMATHIA TUBERCULOSA	H. TUBERCULOSA
3600	HETEROPODA/PTEROPODA	SEA SNAILS,DEA BUTTERFLIES	750	HOWELLA BRODIEI	CARDINALFISH
4537	HETEROTEUTHINAE S.F.	HETEROTEUTHINAE S.F.	783	HOWELLA SHERBORNI	SHERBORNS CARDINALFISH
4538	HETEROTEUTHIS DISPAR	H. DISPAR	2527	HYAS ARANEUS	TOAD CRAB
	HEXANCHIDAE	SHARKS, COW (NS)	2521	HYAS COARCTATUS	HYAS COARCTATUS
	HEXANCHIFORMES (ORDER)	SHARKS, COW (NS)	2520	HYAS SP.	TOAD CRAB,UNIDENT.
4319	HIATELLA ARCTICA	SOFT SHELL OR LONG NECK CLAM	242	HYDROLAGUS AFFINIS	DEEPWATER CHIMAERA
432	HILDEBRANDIA SP.	HILDEBRANDIA SP.	8400	HYDROZOA C.	HYDROZOA C.
	HIMANTOLOPHIDAE	FOOTBALLFISHES (NS)	134	HYGOPHUM BENOITI	BENOIT'S LANTERNFISH
403	HIMANTOLOPHUS GROENLANDICUS	ATL FOOTBALLFISH	135	HYGOPHUM HYGOMI	HYGOPHUM HYGOMI
404	HIMANTOLOPHUS SP.	HIMANTOLOPHUS SP.	136	HYGOPHUM MACROCHIR	HYGOPHUM MACROCHIR
6117	HIPPASTERIA PHRYGIANA	H. PHRYGIANA	342	HYGOPHUM REINHARDTII	H. REINHARDTII
779	HIPPOCAMPUS ERECTUS	LINED SEAHORSE	861	HYGOPHUM SP.	HYGOPHUM SP.
	HIPPOCAMPUS REIDI	OFFSHORE SEAHORSE	467	HYGOPHUM TAANINGI	HYGOPHUM TAANINGI
40	HIPPOGLOSSOIDES PLATESSOIDES	AMERICAN PLAICE		HYMENOCEPHALUS SP.	GRENADIER (NS)
1222	HIPPOGLOSSOIDES PLATESSOIDES EGGS	PLAICE EGGS	2903	HYPERIA GALBA	BIG-EYED AMPHIPOD
30	HIPPOGLOSSUS HIPPOGLOSSUS	HALIBUT(ATLANTIC)	2810	HYPERIA SP.	HYPERIA SP.
1248	HIPPOGLOSSUS HIPPOGLOSSUS EGGS	ATL HALIBUT EGGS	2906	HYPERIIDAE F.	HYPERIIDAE F.
2309	HIPPOLYTE ZOSTERICOLA	EEL GRASS SHRIMP	2905	HYPERIIDEA S.O.	HYPERIIDEA S.O.
2300	HIPPOLYTIDAE F.	HIPPOLYTIDAE F.	743	HYPEROGLYPHE PERCIFORMIS	AMER BARRELFISH
2835	HIPPOMEDON DENTERULATUS	H. DENTERULATUS	922	HYPEROODON AMPULLATUS	NORTH-BOTTLENOSE WHALE
2836	HIPPOMEDON PROPINQUUS	H. PROPINQUUS		HYPLEUROCHILUS GEMINATUS	CRESTED BLENNY
2829	HIPPOMEDON SERRATUS	H. SERRATUS	737	HYPORHAMPHUS SP.	COMMON HALFBEAK
2838	HIPPOMEDON SP.	HIPPOMEDON SP.		HYPORHAMPHUS UNIFASCIATUS	HALFBEAK
682	HIRUNDICHTHYS AFFINIS	FOURWING FLYING FISH	1312	HYPPOLYTID EGGS	HIPPOLYTID EGGS
736	HIRUNDICHTHYS RONDELETTI	BLACKWING FLYINGFISH		HYPSOBLENNIUS HENTZI	FEATHER BLENNY
	HISTIOBRANCHUS BATHYBIUS	HISTOBRANCHUS		HYPSOBLENNIUS IONTHAS	FRECKLED BLENNY
4574	HISTIOTEUTHIDAE F.	HISTIOTEUTHIDAE F.	313	ICELUS BICORNIS	TWOHORN SCULPIN
4575	HISTIOTEUTHIS BONNELLII	H. BONNELLII	318	ICELUS SP.	SCULPIN
4576	HISTIOTEUTHIS CELETARIA CELETARIA	H. C. CELETARIA	314	ICELUS SPATULA	SPATULATE SCULPIN
4577	HISTIOTEUTHIS CORONA CORONA	H. C. CORONA	389	ICHTHYOCOCCUS OVATUS	I. OVATUS
4578	HISTIOTEUTHIS DOFLEINI	H. DOFLEINI		IDIACANTHIDAE	SAWTAILFISHES (NS)
4579	HISTIOTEUTHIS ELONGATA	H. ELONGATA	723	IDIACANTHUS FASCIOLA	RIBBON SAWTAILFISH
4580	HISTIOTEUTHIS REVERSA	H. REVERSA	2982	IDOTEA BALTICA	IDOTEA BALTICA
399	HISTRIO HISTRIO	SARGASSUMFISH	2983	IDOTEA PHOSPHOREA	IDOTEA PHOSPHOREA
	HOLACANTHUS BERMUDENSIS	BLUE ANGELFISH	2996	IDOTEA SP.	IDOTEA SP.
	HOLACANTHUS CILIARIS	QUEEN ANGELFISH	2992	IDOTEIDAE F.	IDOTEIDAE F.
	HOLACANTHUS TRICOLOR	ROCKY BEAUTY	4511	ILLEX ILLECEBROSUS	SHORT-FIN SQUID
828	HOLANTHIAS MARTINICENSIS	ROUGHTONGUE BASS	4515	ILLEX SP.	ILLEX SP.
	HOLLARDIA SP.	SPIKEFISH (NS)	4232	ILYANASSA OBSOLETA	MUD SNAIL

4520	INCIRRATA S.O.	INCIRRATA S.O.
9405	INSECTA C.	LAND INSECTS
1600	INVERTEBRATE EGGS	INVERTEBRATE EGGS
1305	INVERTEBRATE EGGS OTHER	INVERTEBRATE EGGS OTHER
4712	ISCHNOCHITON SP.	ISCHNOCHITON SP.
2897	ISCHYROCERIDAE F.	ISCHYROCERIDAE F.
2824	ISOPODA O.	RED ISOPOD
2980	ISOPODA O.	ISOPODA O.
	ISTIOPHORIDAE	MARLINS,SAILFISHES
255	ISTIOPHORUS PLATYPTERUS	SAILFISH
238	ISURUS OXYRINCHUS	SHORTFIN MAKO
	ISURUS PAUCUS	LONGFIN MAKO
2994	JAERA MARINA	LITTLE SHORE ISOPOD
2950	JANIRA ALTA	JANIRA ALTA
843	JENKINSIA LAMPROTAENIA	DWARF HERRING
	KATHETOSTOMA ALBIGUTTA	STARGAZER
482	KAUPICHTHYS HYOPROROIDES	K. HYOPROROIDES
106	KYPHOSUS SECTATRIX	BERMUDA CHUB
36	LABRIDAE F.	WRASSES
199	LABROIDEI S.O.	LABROIDEI S.O.
	LACHNOLAIMUS MAXIMUS	HOGFISH
	LACTOPHRYS POLYGONIA	HONEYCOMB COWFISH
	LACTOPHRYS QUADRICORNIS	SCRAWLED COWFISH
794	LACTOPHRYS TRIGONUS	TRUNKFISH
809	LACTOPHRYS TRIQUETER	SMOOTH TRUNKFISH
	LACTROPHRYS BICAUDALIS	SPOTTED TRUNKFISH
319	LAEMONEMA BARBATULA	L. BARBATULA
933	LAGENORHYNCHUS ACUTUS	ATL WHITE-SIDED DOLPHIN
932	LAGENORHYNCHUS ALBIROSTRIS	WHITE BEAKED DOLPHIN
	LAGOCEPHALUS LAEVIGATUS	PUFFER, SMOOTH
792	LAGOCEPHALUS LAGOCEPHALUS	OCEANIC PUFFER
	LAGODON RHOMBOIDES	PINFISH
230	LAMNA NASUS	PORBEAGLE,MACKEREL SHARK
	LAMNIDAE	SHARKS,MACKEREL (NS)
	LAMNIFORMES (ORDER)	SHARKS,SAND (NS)
461	LAMPADENA ATLANTICA	L. ATLANTICA
549	LAMPADENA CHAVESI	L. CHAVESI
137	LAMPADENA LUMINOSA	L. NITIDA
343	LAMPADENA SP.	LAMPADENA SP.
138	LAMPADENA SPECULIGERA	MIRROR LANTERNFISH
138	LAMPADENA SPECULIGERA	MIRROR LANTERNFISH
4543	LAMPADIOTEUTHIS SP.	LAMPADIOTEUTHIS SP.
139	LAMPANYCTUS ALATUS	L. ALATUS
284	LAMPANYCTUS ATER	L. ATER
144	LAMPANYCTUS CROCODILUS	JEWEL LANTERNFISH
145	LAMPANYCTUS FESTIVUS	L. FESTIVUS
460	LAMPANYCTUS INTRICARIUS	L. INTRICARIUS
550	LAMPANYCTUS LINEATUS	L. LINEATUS
146	LAMPANYCTUS MACDONALDI	L. MACDONALDI
551	LAMPANYCTUS NOBILIS	L. NOBILIS
465	LAMPANYCTUS PHOTONOTUS	L. PHOTONOTUS
147	LAMPANYCTUS PUSILLUS	L. PUSILLUS
252	LAMPANYCTUS SP.	LAMPANYCTUS SP.
841	LAMPETRA JAPONICA	LAMPETRA JAPONICA
842	LAMPETRA LAMOTTEI	LAMPETRA LAMOTTEI
	LAMPRIDAE F.	OPAHS (NS)
	LAMPRIDIFORMES (ORDER)	RIBBONFISHES (NS)
778	LAMPRIS GUTTATUS	OPAH
	LARIMUS FASCIATUS	BANDED DRUM
1830	LARVACEA C.	LARVACEA C.
763	LASIOGNATHUS BEEBEI	L. BEEBEI
4588	LEACHIA SP.	LEACHIA SP.
2319	LEBBEUS GROENLANDICUS	L. GROENLANDICUS
2312	LEBBEUS POLARIS	LEBBEUS POLARIS
2320	LEBBEUS SP.	LEBBEUS SP.
2321	LEBBEUS ZEBRA	LEBBEUS ZEBRA
3163	LEIOCHONE SP.	LEIOCHONE SP.
270	LEIOSTOMUS XANTHURUS	SPOT CROAKER
108	LEPIDION EQUES	LEPIDION EQUES
27	LEPIDOCYBIUM FLAVOBRUNNEUM	ESCOLAR
3501	LEPIDONOTUS SQUAMATUS	L. SQUAMATUS
469	LEPIDOPHANES GAUSSI	L. GAUSSI
228	LEPIDOPHANES GUENTHERI	L. GUENTHERI
552	LEPIDOPHANES SP.	LEPIDOPHANES SP.
4714	LEPIDOPLEURUS CANCELLATUS	ARCTIC CANCELLATE CHITON
4570	LEPIDOTEUTHIDAE F.	LEPIDOTEUTHIDAE F.
	LEPISOSTEIDAE	GARS (NS)
250	LEPISOSTEUS OSSEUS	LONGNOSE GAR
650	LEPOPHIDIUM CERVINUM	FAWN CUSK EEL
	LEPOPHIDIUM JEANNAE	MOTTLED CUSK-EEL
764	LEPTACANTHICHTHYS GRACILISPINIS	L. GRACILI
6132	LEPTASTERIAS MULLERI	MULLER'S STARFISH
6113	LEPTASTERIAS POLARIS	L. POLARIS
6134	LEPTASTERIAS TENERA	SLENDER ARMED SEA STAR
2822	LEPTOCHEIRUS PINGUIS	PURPLE AMPHI
2974	LEPTOCUMA MINOR	LEPTOCUMA MINOR
3185	LEPTONIDAE F.	LEPTONIDAE F.
874	LEPTOSTOMIAS GLADIATOR	L. GLADIATOR
817	LEPTOSTOMIAS SP.	LEPTOSTOMIAS SP.
2929	LERNAEOCERA BRANCHIALIS	L. BRANCHIALIS
553	LESTIDIOPS AFFINIS	L. AFFINIS
688	LESTIDIOPS JAYAKARI	L. JAYAKARI
487	LESTIDIOPS SP.	LESTIDIOPS SP.
666	LESTIDIUM ATLANTICUM	L. ATLANTICUM
483	LESTROLEPIS INTERMEDIA	L. INTERMEDIA
839	LETHARCHUS ALICULATUS	L. ALICULATUS
	LETHARCHUS VELIFER	SAILFIN EEL
2975	LEUCON NASICOIDES	LEUCON NASICOIDES
2843	LILLJEBORGIA SP.	LILLJEBORGIA SP.
4621	LIMACINA HELICINA	HELOCID PTEROPOD
4622	LIMACINA RETROVERSA	SHELLED SEA BUTTERFLY
2605	LIMACINA SP.	LIMACINA SP.
42	LIMANDA FERRUGINEA	YELLOWTAIL FLOUNDER
1230	LIMANDA FERRUGINEA EGGS	YELLOWTAIL EGGS
4347	LIMATULA SP.	LIMATULA SP.
2514	LIMULUS POLYPHEMUS	HORSESHOE CRAB (AMERICAN)
406	LINOPHRYNE ALGIBARBATA	L. ALGIBARBATA
407	LINOPHRYNE CORONATA	L. CORONATA

408	LINOPHRYNE LUCIFERA	L. LUCIFERA
554	LINOPHRYNE SP.	LINOPHRYNE SP.
4589	LIOCRANCHIA SP.	LIOCRANCHIA SP.
140	LIOPSETTA PUTNAMI	SMOOTH FLOUNDER
1219	LIOPSETTA PUTNAMI EGGS	SMOOTH FLOUNDER EGGS
503	LIPARIS ATLANTICUS	ATLANTIC SEASNAIL
513	LIPARIS COHENI	GULF SEA SNAIL
505	LIPARIS FABRICII	SEASNAIL,GELATINOUS
512	LIPARIS GIBBUS	SEASNAIL,DUSKY
508	LIPARIS INQUILINUS	INQUILINE SEASNAIL
504	LIPARIS LIPARIS	STRIPED SEASNAIL
500	LIPARIS SP.	SEASNAIL UNIDENTIFIED
1295	LIPARIS SP. EGG	UNIDENTIFIED SEASNAIL EGG
506	LIPARIS TUNICATUS	GREENLAND SEASNAIL
	LIPOGENYIDAE	LIPOGENYS (NS)
615	LIPOGENYS GILLII	BACKFIN TAPIRFISH
2523	LITHODES MAJA	NORTHERN SNOW CRAB
2525	LITHODES/NEOLITHODES	SPINY CRAB
4250	LITTORINIDAE F.	PERIWINKLES
758	LOBIANCHIA DOFLEINI	DOFLEINS LANTERNFISH
178	LOBIANCHIA GEMELLERII	LOBIANCHIA GEMELLERII
	LOBOTES SURINAMENSIS	TRIPLETAIL
1315	LOBSTER EGGS	LOBSTER EGGS
4540	LOLIGINIDAE F.	LOLIGINIDAE F.
4514	LOLIGINIDAE,OMMASTREPHIDAE F.	SQUID (NS)
4512	LOLIGO PEALEI	LONG-FINNED SQUID
4541	LOLIGO SP.	LOLIGO SP.
	LOLLIGUNCULA BREVIS	BRIEF SQUID
	LOPHIIDAE	GOOSEFISHES (NS)
298	LOPHIIFONMES O.	LOPHIIFORMES
400	LOPHIUS AMERICANUS	MONKFISH,GOOSEFISH,ANGLER
1238	LOPHIUS AMERICANUS EGGS	ANGLER/MONKFISH EGGS
	LOPHIUS GASTROPHYSUS	BLACKFIN GOOSEFISH
765	LOPHODOLUS ACANTHOGNATHUS	L. ACANTHOGNATUS
25	LOPHOLATILUS CHAMAELEONTICEPS	TILE FISH
555	LOPHOTUS LACEPEDEI	L. LACEPEDEI
	LOTA LOTA	BURBOT (LING)
454	LOWEINA RARA	LOWEINA RARA
3190	LUCINIDAE F.	LUCINIDAE F.
3117	LUMBRINEREIDAE F.	LUMBRINEREIDAE F.
3122	LUMBRINERIS FRAGILIS	L. FRAGILIS
3123	LUMBRINERIS LATREILLI	L. LATREILLI
3103	LUMBRINERIS SP.	LUMBRINERIS SP.
3118	LUMBRINERIS TENUIS	L. TENUIS
645	LUMPENIDAE F.	SHANNY-UNIDENTIFIED
	LUMPENUS SP.	BLENNIES (NS)
631	LUMPENUS FABRICII	SLENDER EELBLENNY
622	LUMPENUS LUMPRETAEFORMIS	SNAKE BLENNY
623	LUMPENUS MACULATUS	DAUBED SHANNY
623	LUMPENUS MACULATUS	DAUBED SHANNY
632	LUMPENUS MEDIUS	STOUT EELBLENNY
	LUMPFISH ROE	LUMPFISH ROE
4221	LUNATIA HEROS	MOONSHELL
4258	LUNATIA TRISERIATA	SPOTTED NORTHERN MOONTAIL
	LUTJANIDAE	SNAPPERS (NS)
	LUTJANUS AYA	SNAPPER,RED
	LUTJANUS ANALIS	SNAPPER,MUTTON
	LUTJANUS APODUS	SCHOOLMASTER
	LUTJANUS BUCCANELLA	BLACKFIN SNAPPER
	LUTJANUS CAMPECHANUS	RED SNAPPER
	LUTJANUS GRISEUS	GREY SNAPPER
	LUTJANUS JOCU	DOG SNAPPER
98	LUTJANUS SP.	LUTJANUS SP.
	LUTJANUS SYNAGRIS	LANE SNAPPER
	LUTJANUS VIVANUS	SILK SNAPPER
	LYCENCHELYS SP.	WOLF EEL (NS)
	LYCENCHELYS INGOLFIANUS	WOLF EEL,INGOLF'S
	LYCENCHELYS KOLTHOFFI	WOLF EEL,KOLTHOFF'S
617	LYCENCHELYS PAXILLUS	COMMON WOLF EEL
618	LYCENCHELYS SARSI	SARS WOLF EEL
603	LYCENCHELYS VERRILLI	WOLF EELPOUT
643	LYCODES ESMARKI	VACHON'S EELPOUT
	LYCODES EUDIPLEUROSTICTUS	EELPOUT (NS)
	LYCODES FRIGIDUS	EELPOUT (NS)
620	LYCODES LAVALAEI	LAVAL`S EELPOUT
	LYCODES MUCOSUS	EELPOUT (NS)
627	LYCODES PALLIDUS	PALE EELPOUT
628	LYCODES POLARIS	POLAR EELPOUT
641	LYCODES RETICULATUS	ARCTIC EELPOUT
	LYCODES SEMINUDUS	EELPOUT SEMINUDE
	LYCODES SEMINUDUS	EELPOUT,SEMINUDE
642	LYCODES SP.	EELPOUTS(NS)
619	LYCODES TERRAENOVA	EELPOUT,NEWFOUNDLAND
647	LYCODES VAHLII	SHORTTAILED EELPOUT(VAHL)
	LYCODONUS MIRABILIS	EELPOUT (NS)
4542	LYCOTEUTHIDAE F.	LYCOTEUTHIDAE F.
2533	LYREIDUS BAIRDII	LYREIDUS BAIRDII
2830	LYSIANASSIDAE F.	LYSIANASSIDAE F.
4313	MACOMA SP.	MACOMA SP.
479	MACROPARALEPIS AFFINE	M. AFFINE
556	MACRORHAMPHOSUS SCOLOPAX	LONGSPINE SNIPEFISH
395	MACROSTOMIAS LONGIBARBATUS	M. LONGIBARBATUS
416	MACROURIDAE F.	GRENADIERS (NS)
411	MACROURUS BERGLAX	ROUGHHEAD GRENADIER
	MACROURUS HOLOTRACHYS	GRENADIER (NS)
	MACROURUS SP.	GRENADIERS (NS)
640	MACROZOARCES AMERICANUS	OCEAN POUT(COMMON)
2825	MAERA LOVENI	MAERA LOVENI
2519	MAJIDAE F.	SPIDER CRAB (NS)
32	MAKAIRA ALBIDA	WHITE MARLIN
835	MAKAIRA INDICA	BLACK MARLIN
33	MAKAIRA NIGRICANS	BLUE MARLIN
	MALACANTHUS PLUMIERI	SAND TILEFISH
409	MALACOCEPHALUS OCCIDENTALIS	AMER STRAPTAIL GRENADIER
819	MALACOSTEIDAE F.	LOOSEJAWS (NS)
177	MALACOSTEUS NIGER	LOOSEJAW
3143	MALDANIDAE F.	FILAMENT TUBE WORM
64	MALLOTUS VILLOSUS	CAPELIN

225	MANTA BIROSTRIS	ATLANTIC MANTA
4223	MARGARITES CINERA (OBSOLETE)	MARGARITES CINERA
4224	MARGARITES COSTALIS	M. COSTALIS
4225	MARGARITES GROENLANDICA	M. GROENLANDICA
4254	MARGARITES HELICINA	M. HELICINA
390	MARGRETHIA OBTUSIROSTRA	M. OBTUSIROSTRA
1701	MARINE INVERTEBRATA (NS)	MARINE INVERTEBRATES (NS)
4584	MASTIGOTEUTHIS SP.	MASTIGOTEUTHIS SP.
158	MAUROLICUS MUELLERI	MULLER'S PEARLSIDES
1215	MAUROLICUS MUELLERI EGGS	MULLER'S PEARLSIDES EGGS
4595	MEGALOCRANCHIA SP.	MEGALOCRANCHIA SP.
167	MEGALOPS ATLANTICUS	TARPON
2611	MEGANYCTIPHANES NORVEGICA	M. NORVEGICA
558	MELAMPHAEIDAE	MELAMPHAEIDAE
798	MELAMPHAES MICROPS	MELAMPHAES MICROPS
368	MELAMPHAES PUMILUS	MELAMPHAES PUMILUS
686	MELAMPHAES SP.	MELAMPHAES SP.
557	MELAMPHAES SUBORBITALIS	M. SUBORBITALIS
493	MELAMPHAES TYPHLOPS	M. TYPHLOPS
760	MELANOCETUS JOHNSONI	M. E. JOHNSONI
373	MELANOCETUS SP.	MELANOCETUS SP.
11	MELANOGRAMMUS AEGLEFINUS	HADDOCK
1212	MELANOGRAMMUS AEGLEFINUS EGGS	HADDOCK EGGS
357	MELANONUS ZUGMAYERI	M. ZUGMAYERI
646	MELANOSTIGMA ATLANTICUM	ATL SOFT POUT
872	MELANOSTOMIAS MELANOPOGON	M. MELANOPOGON
718	MELANOSTOMIAS SPILORHYNCHUS	BLUENOSE DRAGONFISH
665	MELANOSTOMIATIDAE (STOMIATIDAE)	DRAGONFISHES,SMOOTH
3137	MELINNA CRISTATA	AMPHARETID WORM
3129	MELINNIA ELIZABETHAE	M. ELIZABETHAE
2812	MELITA DENTATA	MELITA DENTATA
2814	MELITA SP.	MELITA SP.
	MEMBRAS MARTINICA	ROUGH SILVERSIDE
	MENIDIA BERYLLINA	TIDEWATER SILVERSIDE
770	MENIDIA MENIDIA	ATLANTIC SILVERSIDE
	MENTICIRRHUS AMERICANUS	SOUTHERN KINGFISH
	MENTICIRRHUS LITTORALIS	GULF KINGFISH
7	MENTICIRRHUS SAXATILIS	NORTHERN KINGFISH
726	MENTODUS ROSTRATUS	MENTODUS ROSTRATUS
4323	MERCENARIA MERCENARIA	HARD CLAM
19	MERLUCCIUS ALBIDUS	OFF-SHORE HAKE
1245	MERLUCCIUS ALBIDUS EGGS	OFFSHORE HAKE EGGS
14	MERLUCCIUS BILINEARIS	SILVER HAKE
1239	MERLUCCIUS BILINEARIS EGGS	SILVER HAKE EGGS
35	MERLUCCIUS SP.	HAKE
2732	METERYTHROPS ROBUSTUS	M. ROBUSTUS
2925	METRIDIA LONGA	METRIDIA LONGA
2924	METRIDIA LUCENS	METRIDIA LUCENS
2933	METRIDIA SP.	METRIDIA SP.
8311	METRIDIUM SENILE	METRIDIUM SENILE
2937	MICROCALANUS PUSILLUS	M. PUSILLUS
855	MICRODESMIDAE F.	MICRODESMIDAE F.
17	MICROGADUS TOMCOD	TOMCOD(ATLANTIC)
766	MICROLOPHICHTHYS MICROLOPHUS	M. MICROLOP

117	MICROMESISTIUS POUTASSOU	BLUE WHITING
258	MICROPOGONIAS UNDULATUS	ATLANTIC CROAKER
421	MICROSTOMA MICROSTOMA	M. MICROSTOMA
	MOBULIDAE	MANTAS,DEVILFISHES
4332	MODIOLUS MODIOLUS	HORSE MUSSELS
730	MOLA MOLA	OCEAN SUNFISH
1826	MOLGULA MANHATTENSIS	SEA GRAPES
1815	MOLGULIDAE F.	MOLGULIDAE F.
	MOLIDAE	OCEAN SUNFISHES (NS)
1500	MOLLUSCA EGGS	MOLLUSC EGGS UNID.
4005	MOLLUSCA LARVAE	MOLLUSCA LARVAE
4000	MOLLUSCA P.	MOLLUSCA P.
6720	MOLPADIA MUSCULUS	MOLPADIA MUSCULUS
6718	MOLPADIA SP.	MOLPADIA SP.
56	MOLVA DYPTERYGIA	BLUE LING
55	MOLVA MOLVA	EUROPEAN LING
	MONACANTHINAE	FILEFISHES (NS)
5	MONACANTHUS CILIATUS	FRINGED FILEFISH
2885	MONOCULODES EDWARDSI	M. EDWARDSI
2881	MONOCULODES SP.	MONOCULODES SP.
324	MONOLENE ANTILLARUM	M. ANTILLARUM
385	MONOLENE SESSILICAUDA	DEEPWATER FLOUNDER
382	MONOLENE SP.	MONOLENE SP.
870	MONOMITOPUS AGASSIZI	M. AGASSIZI
2908	MONSTRILLA SP.	COPEPOD
	MONSTRILLIDAE F.	COPEPOD
471	MORGINUA EDWARDSI	MORGINUA EDWARDSI
194	MORIDAE	MORAS
470	MORINGUIDEA F.	MORINGUIDEA F.
120	MORONE AMERICANA	WHITE PERCH
24	MORONE SAXATILIS	STRIPED BASS
9100	MUCUS	MUCUS
9500	MUD	MUD
48	MUGIL CEPHALUS	STRIPED MULLET
47	MUGIL CUREMA	WHITE MULLET
	MUGIL LIZA	LIZA
	MUGIL TRICHODON	FANTAIL MULLET
265	MUGILIDAE F.	MULLETS
	MUGILOIDEI	MULLETS (NS)
	MULLIDAE	SURMULLETS (NS)
105	MULLUS AURATUS	RED GOATFISH
2555	MUNIDA IRIS	MUNIDA IRIS
2556	MUNIDA VALIDA	MUNIDA VALIDA
2566	MUNIDOPSIS CURVIROSTRA	M. CURVIROSTRA
2986	MUNNOPSIS TYPICA	MUNNOPSIS TYPICA
485	MURAENESOCIDAE F.	MURAENESOCIDAE F.
425	MURAENIDAE F.	EELS,MORAY (NS)
4334	MUSCULUS NIGER	MUSCULUS NIGER
222	MUSTELUS CANIS	SMOOTH DOGFISH
	MUSTELUS NORRISI	FLORISA SMOOTHHOUND
4318	MYA ARENARIA	SOFT SHELL CLAM
4309	MYA TRUNCATA	MYA TRUNCATA
8615	MYCALE SP.	MYCALE SP.
	MYCTEROPERCA BONACI	BLACK GROUPER

	MYCTEROPERCA INTERSTITIALIS	YELLOWMOUTH GROUPER
	MYCTEROPERCA MICROLEPIS	GAG
	MYCTEROPERCA PHENAX	SCAMP
664	MYCTEROPERCA SP.	SEA BASSES
	MYCTEROPERCA VENENOSA	YELLOWFIN GROUPER
	MYCTOPHIDAE	LANTERNFISH (NS)
150	MYCTOPHIDAE	LANTERNFISH (NS)
811	MYCTOPHIFORMES O.	MYCTOPHIFORMES
179	MYCTOPHUM AFFINE	METALLIC LANTERNFISH
327	MYCTOPHUM ASPERUM	MYCTOPHUM ASPERUM
474	MYCTOPHUM NITIDULUM	MYCTOPHUM NITIDULUM
180	MYCTOPHUM PUNCTATUM	SPOTTED LANTERNFISH
559	MYCTOPHUM SELENOPS	MYCTOPHUM SELENOPS
370	MYCTOPHUM SP.	MYCTOPHUM SP.
214	MYLIOBATIFORMES O. (NS)	RAYS (NS)
	MYLIOBATIS FREMINVILLEI	BULLNOSE RAY
	MYLIOBATIS GOODEI	SOUTHERN EAGLE RAY
4502	MYOPSIDA S.O.	MYOPSIDA S.O.
303	MYOXOCEPHALUS AENEUS	GRUBBY(LITTLE)
1228	MYOXOCEPHALUS EGGS	SCULPIN EGGS UNID.
300	MYOXOCEPHALUS OCTODECEMSPINOSUS	LONGHORN SCULPIN
315	MYOXOCEPHALUS QUADRICORNIS	FOURHORN SCULPIN
316	MYOXOCEPHALUS SCORPIOIDES	ARCTIC SCULPIN
301	MYOXOCEPHALUS SCORPIUS	SHORTHORN SCULPIN
310	MYOXOCEPHALUS SP.	SCULPIN
	MYRIPRISTIS JACOBUS	BLACKVAR SOLDIERFISH
448	MYROPHIS PLATYRHYNCHUS	M. PLATYRHYNCHUS
449	MYROPHIS PUNCTATUS	EEL,SPECKLED WORM
449	MYROPHIS PUNCTATUS	MYROPHIS PUNCTATUS
2700	MYSIDACEA O.	MYSID SHRIMP
2713	MYSIS GASPENSIS	MYSIS GASPENSIS
2712	MYSIS MIXTA	MYSIS MIXTA
2710	MYSIS SP.	MYSIS SP.
2711	MYSIS STENOLEPIS	MYSIS STENOLEPIS
	MYSTRIOPHIS SP.	SPOON-NOSE EEL (NS)
4330	MYTILIDAE F.	MUSSELS (NS)
	MYTILIDAE SP.	MUSSELS (NS)
4331	MYTILUS EDULIS	COMMON MUSSELS
241	MYXINE GLUTINOSA	NORTHERN HAGFISH
	MYXINIDAE	HAGFISHES (NS)
	MYXINIFORMES	HAGFISHES (NS)
162	NANSENIA GROENLANDICA	ARGENTINE.LARGE-EYED
561	NANSENIA OBLITA	NANSENIA OBLITA
	NARCINE BRASILIENSIS	LESSER ELECTRIC RAY
4233	NASSA BIVITTATA	DOG WHELK
4235	NASSARIIDAE OR THAISIDAE F.	DOG WHELKS
	NATANTIA SP.	SHRIMP (NS)
4222	NATICA CLAUSA	LITTLE MOONSHELL
	NATICIDAE	MOONSNAIL (NS)
88	NAUCRATES DUCTOR	PILOTFISH
285	NAUCRATES SP.	NAUCRATES SP.
28	NEALOTUS TRIPES	NEALOTUS TRIPES
2960	NEBALIA BIPES	NEBALIA SHRIMP
2961	NEBALIA SP.	NEBALIA SP.
	NEGAPRION BREVIROSTRIS	LEMON SHARK
7100	NEMATODA C.	NEMATODA C.
1440	NEMATODA EGGS	TUBE WORMS EGGS UNID.
	NEMATONURUS ARMATUS	GRENADIER (NS)
463	NEMICHTHYIDAE F.	EELS,SNIPE (NS)
562	NEMICHTHYS CURVIROSTRIS	N. CURVIROSTRIS
604	NEMICHTHYS SCOLOPACEUS	SNIPE EEL
464	NEMICHTHYS SP.	NEMICHTHYS SP.
472	NEOCONGER MUCRONATUS	N. MUCRONATUS
567	NEOCONGER SP.	NEOCONGER SP.
563	NEOEPINNULA ORIENTALIS	N. ORIENTALIS
2528	NEOLITHODES GRIMALDI	SPINY SPIDER CRAB
	NEOMERINTHE HEMINGWAYI	SPINYCHEEK SCORPIONFISH
2734	NEOMYSIS AMERICANA	NEOMYSIS AMERICANA
2866	NEOPLEUSTES PULCHELLUS	N. PULCHELLUS
3115	NEPHTYIDAE F.	NEPHTYIDFAE F.
3182	NEPHTYS BUCERA	NEPHTYS BUCERA
3183	NEPHTYS INCISA	NEPHTYS INCISA
3104	NEPHTYS SP.	NEPHTYS SP.
4227	NEPTUNEA DECEMCOSTATA	NEW ENGLAND NEPTUNE
3150	NEREIDAE F.	NEREIDAE F.
3132	NEREIS GRAYI	NEREIS GRAYI
3131	NEREIS PELAGICA	NEREIS PELAGICA
3130	NEREIS SP.	NEREIS SP.
3135	NEREIS ZONATA	NEREIS ZONATA
877	NESIARCHUS NASUTUS	LONGNOSE ESCOLAR
607	NESSORHAMPHUS INGOLFIANUS	DUCKBILL OCEANIC EEL
476	NETTASTOMA SP.	NETTASTOMA SP.
475	NETTASTOMATIDAE F.	NETTASTOMATIDAE F.
	NEZUMIA SP.	GRENADIER (NS)
	NEZUMIA AEQUALIS	GRENADIER (NS)
	NEZUMIA AEQUALIS	GRENADIER (NS)
410	NEZUMIA BAIRDI	MARLIN-SPIKE GRENADIER
	NICHOLSINA USTA	EMERALD PARROTFISH
3125	NICOMACHE CANADENSIS	N. CANADENSIS
3119	NINOE NIGRIPES	NINOE NIGRIPES
821	NOMEIDAE F.	DRIFTFISHES
788	NOMEUS GRONOVII	MAN-OF-WAR FISH
662	NOTACANTHIDAE F.	SPINY EELS (NS)
662	NOTACANTHIDAE F.	SPINY EELS (NS)
740	NOTACANTHUS CHEMNITZI	SPINY EEL
856	NOTEMIGONUS CRYSOLEUCAS	N. CRYSOLEUCAS
3166	NOTHRIA CONCHYLEGA	N. CONCHYLEGA
727	NOTOLEPIS RISSOI	WHITE BARRACUDINA
712	NOTOLEPIS RISSOI KROYERI	WHITE BARRACUDINA
181	NOTOLYCHNUS VALDIVIAE	N. VALDIVIAE
287	NOTOSCOPELUS BOLINI	N. BOLINI
478	NOTOSCOPELUS CAUDISPINOSUS	N. CAUDISPINOSUS
182	NOTOSCOPELUS ELONGATUS KROYERI	LANTERNFISH KROYER'S
183	NOTOSCOPELUS RESPLENDENS	ANTERNFISH PATCHWORK
227	NOTOSCOPELUS SP.	NOTOSCOPELUS SP.
4231	NUCELLA LAPILLUS	NUCELLA LAPILLUS
4361	NUCULA TENUIS	NUCULA TENUIS
4308	NUCULA SP.	NUCULA SP.

4353	NUCULANA BUCCATA	NUCULANA BUCCATA
4351	NUCULANA SP.	NUCULANA SP.
4352	NUCULANA TENUISULCATA	THIN NUT CLAM
4360	NUCULANIDAE F.	NUCULANIDAE F.
4350	NUCULIDAE F.	NUT SHELLS
4400	NUDIBRANCHIA O.	SEA SLUGS
2891	NYMPHON LONGITARSE	N. LONGITARSE
2892	NYMPHON MACRUM	NYMPHON MACRUM
2893	NYMPHON SP.	NYMPHON SP.
433	NYSTACTICHTHYS SP.	NYSTACTICHTHYS SP.
8421	OBELIA SP.	HYDROMEDUSAE
4521	OCTOPODA O.	OCTOPUS
4529	OCTOPODIDAE F.	OCTOPODIDAE F.
4561	OCTOPOTEUTHIDAE F.	OCTOPOTEUTHIDAE F.
4562	OCTOPOTEUTHIS SP.	OCTOPOTEUTHIS SP.
4534	OCYTHOIDAE F.	OCYTHOIDAE F.
	OCYURUS CHRYSURUS	YELLOWTAIL SNAPPER
910	ODOBENIDAE F.	ODOBENIDAE F.
	ODONTASPIDIDAE	SHARKS,SAND (NS)
215	ODONTASPIS TAURUS	SHARK,SAND
930	ODONTOCEIT S.O.(DOLPHINS)	DOLPHINS (NS)
920	ODONTOCEIT S.O.(WHALES)	WHALES (NS)
719	ODONTOSTOMIAS SP.	ODONTOSTOMIAS SP.
2880	OEDICEROTIDAE F.	OEDICEROTIDAE F.
4503	OEGOPSIDA S.O.	OEGOPSIDA S.O.
69	OGCOCEPHALIDAE F.	BATFISHES
	OGCOCEPHALUS CORNIGER	O. CORNIGER
	OGCOCEPHALUS CUBIFRONS	BATFISH,POLKADOT
	OGCOCEPHALUS NASUTUS	SHORTNOSE BATFISH
	OGCOCEPHALUS PARVUS	ROUGHBACK BATFISH
	OGCOCEPHALUS VESPERTILIO	LONGNOSE BATFISH
1831	OIKOPLEURA SP.	OIKOPLEURA SP.
9800	OIL(CRUDE)	OIL(CRUDE)
2928	OITHONA SIMILIS	OITHONA SIMILIS
2920	OITHONA SP.	OITHONA SP.
2930	OITHONA SPINIROSTRIS	O. SPINIROSTRIS
3175	OLIGOCHAETA C.	AQUATIC EARTHWORMS
	OLIGOPLITES SAURUS	LEATHERJACKET
4518	OMMASTREPHES BARTRAMI	O. BARTRAMI
4519	OMMASTREPHES PTEROPSUS	O. PTEROPSUS
4513	OMMASTREPHES SP.	OMMASTREPHES SP.
4510	OMMASTREPHIDAE F.	OMMASTREPHIDAE F.
4516	OMMASTREPHINAE S.F.	OMMASTREPHINAE S.F.
729	OMOSUDIS LOWEI	OMOSUDIS LOWEI
68	ONCORHYNCHUS GORBUSCHA	PINK SALMON
767	ONEIRODES ESCHRICHTII	O. ESCHRICHTII
768	ONEIRODES SP.	ONEIRODES SP.
683	ONEIRODIDAE F.	F.ONEIRODIDAE
3460	ONUPHIDAE F.	ONUPHIDAE F.
4563	ONYCHOTEUTHIDAE F.	ONYCHOTEUTHIDAE F.
4564	ONYCHOTEUTHIS SP.	ONYCHOTEUTHIS SP.
4565	ONYKIA SP.	ONYKIA SP.
3157	OPHELIA ACUMINUTA	OPHELIA ACUMINUTA
3156	OPHELIA LIMACINA	OPHELIA LIMANCIA

3159	OPHELIA SP.	OPHELIA SP.
3153	OPHELIIDAE	OPHELIIDAE F.
440	OPHICHTHIDAE F.	SNAKE EELS (NS)
609	OPHICHTHUS CRUENTIFER	SNAKE EEL
451	OPHICHTHUS GOMESI	SHRIMP EEL
	OPHICHTHUS MELANOPORUS	SNAKE EEL (NS)
452	OPHICHTHUS OCELLATUS	EEL,PALESPOTTED
499	OPHICHTHUS PUNCTICEPS	O. PUNCTICEPS
450	OPHICHTHUS SP.	OPHICHTHUS SP.
649	OPHIDIIDAE INCLUDES BROTULIDAE F.	CUSK-EELS
660	OPHIDIOIDEI S.O.	CUSK EELS (NS)
	OPHIDION BEANI	LONGNOSE CUSK-EEL
	OPHIDION GRAYI	BLOTCHED CUSK-EEL
	OPHIDION HOLBROOKI	BANK CUSK-EEL
	OPHIDION MARGINATUM	STRIPED CUSK-EEL
654	OPHIDION SELENOPS	MOONEYE CUSK-EEL
	OPHIDION WELSHI	CRESTED CUSK-EEL
6211	OPHIOPHOLIS ACULEATA	DAISY
6215	OPHIURA ROBUSTA	OPHIURA ROBUSTA
6213	OPHIURA SARSI	OPHIURA SARSI
6212	OPHIURA SP.	OPHIURA SP.
6200	OPHIUROIDEA S.C.	BRITTLE STAR
260	OPISTHONEMA OGLINUM	ATL THREAD HERRING
564	OPISTHOPROCTUS SOLEATUS	O. SOLEATUS
	OPISTOGNATHUS LONCHURUS	MOUSTACHE JAWFISH
	OPISTOGNATHUS MAXILLOSUS	MOTTLED JAWFISH
	OPSANUS PARDUS	LEOPARD TOADFISH
510	OPSANUS TAU	TOAD FISH
3270	ORBINIIDAE F.	ORBINIIDAE F.
2834	ORCHOMONELLA PINGUIS	O. PINGUIS
2831	ORCHOMONELLA SP.	ORCHOMONELLA SP.
4517	ORNITHOTEUTHIS SP.	ORNITHOTEUTHIS SP.
266	ORTHOPRISTIS CHRYSOPTERA	PIGFISH
337	OSMERIDAE F.	SMELTS,CAPELIN (NS)
63	OSMERUS MORDAX	RAINBOW SMELT
560	OSTEICHTHYES C.	FISHES,BONY (NS)
	OSTICHTHYS TRACHYPOMA	BIGEYE SOLDIERFISH
	OSTRACIONTIDAE (OSTRACIIDAE)	TRUNKFISHES (NS)
2650	OSTRACODA S.C.	OSTRACODA S.C.
	OTHER SEAWEEDS	OTHER SEAWEEDS
	OTOLITHINAE	WEAKFISHES (NS)
950	OTOPHIDIUM OMOSTIGMUM	POLKA-DOT CUSK-EEL
	OVALIPES GUADALUPENSIS	PASTEL SWIMMING CRAB
	OVALIPES OCELLATUS	LADY CRAB
	OVALIPES SP.	CALICO CRAB (NS)
3196	OWENIA FUSIFORMIS	OWENIA FUSIFORMIS
3194	OWENIIDAE F.	OWENIIDAE F.
268	PAGRUS PAGRUS	RED PORGY
2559	PAGURIDAE F.	HERMIT CRABS
2560	PAGUROIDEA S.F.	PAGUROIDEA S.F.
2562	PAGURUS ACADIANUS	PAGURUS ACADIANUS
2568	PAGURUS ARCUATUS	PAGURUS ARCUATUS
2563	PAGURUS KROYERI (OBSOLETE)	PAGURUS KROYERI
2558	PAGURUS POLITUS	PAGURUS POLITUS

2564	PAGURUS PUBESCENS	PAGURUS PUBESCENS
2561	PAGURUS SP.	PAGURUS SP.
2245	PALAEMONETES VULGARIS	SHORE SHRIMP,COMMON PRAWN
2240	PALAEMONIDAE F.	PALAEMONIDAE F.
1311	PANDALID EGGS	PANDALID EGGS
2200	PANDALIDAE F.	PANDALIDAE F.
2211	PANDALUS BOREALIS	PANDALUS BOREALIS
2212	PANDALUS MONTAGUI	PANDALUS MONTAGUI
2213	PANDALUS PROPINQUUS	PANDALUS PROPINQUUS
2210	PANDALUS SP.	PANDALUS SP.
4305	PANDORA GOULDIANA	PANDORA GOULDIANA
586	PARABLENNIUS MARMOREUS	SEAWEED BLENNY
2934	PARACALANUS PARVUS	PARACALANUS PARVUS
2932	PARACALANUS SP.	PARACALANUS SP.
2909	PARACALANUS, CALOCALANUS SP.	P. ,CALOCALANUS
829	PARACONGER CAUDILIMBATUS	MARGINTAIL CONGER
434	PARACONGER SP.	PARACONGER SP.
8323	PARAGORGIA ARBOREA	PARAGORGIA ARBOREA
	PARAHOLLARDIA LINEATA	JAMBEAU
713	PARALEPIDIDAE F.	BARRACUDINA,UNID
565	PARALEPIS SP.	BARRACUDINA (NS)
711	PARALEPIS ATLANTICA	SHORT BARRACUDINA
728	PARALEPIS ATLANTICA ATLANTICA	SHORT BARRACUDINA
	PARALEPIS COREGONOIDES BOREALIS	BARRACUDINA,BOREAL
674	PARALEPIS COREGONOIDES	P. COREGONOIDES
484	PARALEPIS ELONGATA	PARALEPIS ELONGATA
	PARALICHTHYS ALBIGUTTA	FLOUNDER,GULF
141	PARALICHTHYS DENTATUS	SUMMER FLOUNDER
1251	PARALICHTHYS DENTATUS EGGS	SUMMER FLOUNDER EGGS
	PARALICHTHYS LETHOSTIGMA	SOUTHERN FLOUNDER
142	PARALICHTHYS OBLONGUS	FOURSPOT FLOUNDER
1220	PARALICHTHYS OBLONGUS EGGS	FOURSPOT FLOUNDER EGGS
	PARALICHTHYS SP.	FLOUNDERS (NS)
	PARALICHTHYS SQUAMILENTUS	BROAD FLOUNDER
	PARALIPARIS SP.	SEASNAIL (NS)
	PARALIPARIS BATHYBIUS	SEASNAIL (NS)
868	PARALIPARIS CALIDUS	SEASNAIL
511	PARALIPARIS COPEI	BLACKSNOUT SEASNAIL
869	PARALIPARIS GARMANI	SEASNAIL
2805	PARAMPHITHOE HYSTRIX	PARAMPHITHOE HYSTRIX
	PARANTHIAS FURCIFER	CREOLE-FISH
3169	PARAONIS LYRA	PARAONIS LYRA
7000	PARASITES,ROUND WORMS	PARASITES,ROUND WORMS
149	PARASUDIS TRUCULENTA	LONGNOSE GREENEYE
2904	PARATHEMISTO COMPRESSA	P. COMPRESSA
2941	PARATHEMISTO GAUDICHAUDI	P. GAUDICHAUDI
2907	PARATHEMISTO OBLIVIA	P. OBLIVIA
2809	PARATHEMISTO SP.	PARATHEMISTO SP.
486	PARAXENOMYSTAX SP.	PARAXENOMYSTAX SP.
2806	PARDALISCIDAE F.	PARDALISCIDAE F.
2884	PAROEDICEROS LONGIMANUS	P. LONGIMANUS
2882	PAROEDICEROS LYNCEUS	P. LYNCEUS
2883	PAROEDICEROS PROPINGUIS	P. PROPINGUIS
2842	PAROEDICEROS SP.	PAROEDICEROS SP.
2221	PASIPHAEA MULTIDENTATA	P. MULTIDENTATA
2220	PASIPHAEA TARDA	SHRIMP
2219	PASIPHAEIDAE F.	PASIPHAEIDAE F.
3142	PECTINARIA GOULDII	TRUMPET WORM
3149	PECTINARIA GRANULATA	P. GRANULATA
3144	PECTINARIA SP.	PECTINARIA SP.
3139	PECTINARIIDAE F.	PECTINARIIDAE F.
4320	PECTINIDAE F.	SCALLOPS
8520	PELAGIA NOCTILUCA	JELLYFISH
256	PELAGIC FISH (NS)	PELAGIC FISH (NS)
1520	PELECYPODA EGGS	BIVALVE MOLLUS EGGS
1824	PELONAIA SP.	PELONAIA SP.
2450	PENAEIDAE F.	PENAEIDAE F.
8318	PENNATULA BOREALIS	SEA PEN
6127	PENTAGONASTER TOSIA	P. TOSIA
	PEPRILUS ALEPIDOTUS	NORTH ATL. HARVESTFISH
701	PEPRILUS TRIACANTHUS	BUTTERFISH
1234	PEPRILUS TRIACANTHUS EGGS	BUTTERFISH EGGS
636	PERCIFORMES O.	PERCHLIKE FISHES
636	PERCIFORMES O.	PERCHLIKE FISHES
652	PERCOIDEA S.O.	PERCOIDEI F.
	PERISTEDION GRACILE	SEA ROBIN, SLENDER
331	PERISTEDION MINIATUM	ARMORED SEA ROBIN
580	PERISTEDION SP.	PERISTEDION SP.
240	PETROMYZON MARINUS	SEA LAMPREY
	PETROMYZONTIFORMES (HYPEROARTIA)	LAMPREYS (NS)
9303	PHAEOPHYCEAE C.	BROWN SEAWEEDS
3314	PHASCOLION STROMBI	P. STROMBI
3313	PHASCOLOSOMA GOULDII	GOULD'S SIPUNCULID
3320	PHASCOLOSOMA SP.	PHASCOLOSOMA SP.
3171	PHERUSA PHERUSA	FLABELLIGERID WORM
3173	PHERUSA SP.	LABELLIGERID WORMS
4256	PHILINE SINUATA	PHILINE SINUATA
900	PHOCIDAE F.	SEALS (NS)
	PHOLIDAE F.	GUNNELS (NS)
4572	PHOLIDOTEUTHIS SP.	PHOLIDOTEUTHIS SP.
633	PHOLIS FASCIATA	BANDED GUNNEL
621	PHOLIS GUNNELLUS	ROCK GUNNEL(EEL)
419	PHOTONECTES MARGARITA	P. MARGARITA
566	PHOTONECTES SP.	PHOTONECTES SP.
396	PHOTOSTOMIAS GUERNEI	P. GUERNEI
2845	PHOXOCEPHALIDAE F.	PHOXOCEPHALIDAE F.
2853	PHOXOCEPHALUS HOLBOLLI	P. HOLBOLLI
2854	PHOXOCEPHALUS SP.	PHOXOCEPHALUS SP.
2946	PHRONIMA SP.	PHRONIMA SP.
2987	PHRYXUS ABDOMINALIS	P. ABDOMINALIS
57	PHYCINAE S.F.	PHYCINAE S.F.
112	PHYCIS CHESTERI	LONGFIN HAKE
3111	PHYLLODOCE GROENLANDICA	P. GROENLANDICA
3110	PHYLLODOCE SP.	PHYLLODOCE SP.
3114	PHYLLODOCIDAE F.	PHYLLODOCIDAE F.
6705	PHYLLOPHORIDAE F.	PHYLLOPHORIDAE F.
8210	PHYSALIA PELAGICA	MAN OF WAR
757	PHYSICULUS FULVUS	LITTLE MORID

4314	PITAR MORRHUANA	MORRHUA VENUSNA
4321	PLACOPECTEN MAGELLANICUS	SEA SCALLOP
	PLECTRYPOPS RETROSPINIS	CARDINAL SOLDIERFISH
8113	PLEUROBRACHIA SP.	PLEUROBRACHIA SP.
2926	PLEURONAMMA SP.	PLEURONAMMA SP.
49	PLEURONECTIDAE F.	FLOUNDER UNID
1231	PLEURONECTIFORME EGGS	UNID. FLATFISH EGGS
346	PLEURONECTIFORMES O.	FLATFISH
2867	PLEUSTES PANOPLA	PLEUSTES PANOPLA
2351	PODON SP.	PODON SP.
	POECILOPSETTA BEANI	P. BEANI
568	POECILOPSETTA SP.	POECILOPSETTA SP.
104	POGONIAS CROMIS	BLACK DRUM
16	POLLACHIUS VIRENS	POLLOCK
1247	POLLACHIUS VIRENS EGGS	POLLOCK EGGS
752	POLLICHTHYS MAULI	MAULS ANGLEMOUTH
739	POLYACANTHONOTUS RISSOANUS	SHORTSPINE TAPIRFISH
3100	POLYCHAETA C.	BRISTLE WORMS
3101	POLYCHAETA C.,LARGE	LARGE POLYCHAETE, 3MM DIA
3102	POLYCHAETA C.,SMALL	SMALL POLYCHAETE 3MM DIA
1410	POLYCHAETA EGGS	POLYCHAETE EGGS UNID.
3106	POLYCHAETA LARVAE	POLYCHAETA LARVAE
708	POLYIPNUS ASTEROIDES	P. ASTEROIDES
376	POLYIPNUS SP.	POLYIPNUS SP.
8610	POLYMASTIA SP.	POLYMASTIA SP.
	POLYMETME CORYTHAEOLA	P. CORYTHOLA
771	POLYMIXIA LOWEI	BEARDFISH
744	POLYMIXIA NOBILIS	STOUT BEARD FISH
	POLYMIXIIDAE	BEARDFISHES (NS)
3500	POLYNOIDAE F.	POLYNOIDAE F.
4700	POLYPLACOPHORA C.	CHITONS
699	POLYPRION AMERICANUS	ATL WRECKFISH
	POMACANTHUS ARCUATUS	GRAY ANGELFISH
	POMACENTRIDAE	DAMSELFISH (NS)
	POMACENTRUS LEUCOSTICTUS	BEAUGREGORY
	POMACENTRUS VARIABILIS	COCOA DAMSELFISH
263	POMADASYIDAE F.	GRUNTS (GRUNTERS)
	POMATOMIDAE F.	BLUEFISH (NS)
81	POMATOMUS SALTATRIX	BLUEFISH
6133	PONTASTER SP.	PONTASTER SP.
	PONTINUS LONGISPINIS	LONGSPINE SCORPIONFISH
751	PONTINUS RATHBUNI	HIGHFIN SCORPIONFISH
672	PONTINUS SP.	PONTINUS
2865	PONTOGENEIIDAE F.	P. F.
2412	PONTOPHILUS BREVIROSTRIS	P. BREVIROSTRIS
2415	PONTOPHILUS NORVEGICUS	P. NORVEGICUS
6130	PORANIOMORPHA BOREALIS	P. BOREALIS
6129	PORANIOMORPHA HISPIDA	P. HISPIDA
	PORICHTHYS PLECTRODON	ATL MIDSHIPMAN
	PORICHTHYS POROSISSIMUS	ATL MIDSHIPMAN
8600	PORIFERA P.	SPONGES
799	POROMITRA CAPITO	P. CAPITO
800	POROMITRA CRASSICEPS	P. CRASSICEPS
797	POROMITRA MEGALOPS	P. MEGALOPS
569	POROMITRA SP.	POROMITRA SP.
7111	PORROCAECUM DECIPIENS	P. DECIPIENS
7110	PORROCAECUM SP.	PORROCAECUM SP.
	PORTUNID SP.	SWIMMING CRAB (NS)
2515	PORTUNIDAE F.	PORTUNIDAE F.
3147	POTAMILLA NEGLECTA	FAN WORM
3136	POTAMILLA RENIFORMIS	P. RENIFORMIS
3145	PRAXILLELLA SP.	PRAXILLELLA SP.
352	PRIACANTHIDAE F.	BIGEYES (NS)
353	PRIACANTHUS ARENATUS	BIGEYE
79	PRIACANTHUS CRUENTATUS	GLASSEYE SNAPPER
3450	PRIAPULIDA C.	PRIAPULIDA C.
3451	PRIAPULUS CAUDATUS	PRIAPULUS
8322	PRIMNOA RESEDAEFORMIS	P. RESEDAEFORMIS
231	PRIONACE GLAUCA	BLUE SHARK
4310	PRIONODESMATA,TELEODESMATA S.C.	CLAMS (NS)
	PRIONOTUS SP.	SEA ROBIN (NS)
	PRIONOTUS ALATUS	SEA ROBIN SPINY
330	PRIONOTUS CAROLINUS	NORTHERN,COMMON SEAROBIN
332	PRIONOTUS EVOLANS	STRIPED SEAROBIN
	PRIONOTUS OPHRYAS	BANDTAIL SEAROBIN
	PRIONOTUS PARALATUS	GULF SEAROBIN
	PRIONOTUS ROSEUS	BLUESPOTTED SEAROBIN
	PRIONOTUS RUBIO	BLACKFIN SEAROBIN
	PRIONOTUS SALMONICOLOR	BLACKWING SEAROBIN
	PRIONOTUS SCITULUS	LEOPARD SEAROBIN
	PRIONOTUS STEARNSI	SEA ROBIN, SHORTWING
	PRIONOTUS TRIBULUS	BIGHEAD SEAROBIN
2895	PRISCILLINA ARMATA	P. ARMATA
	PRISTIGENYS ALTA	BIGEYE,SHORT
	PRISTIPOMOIDES AQUILONARIS	WENCHMAN
497	PRISTIPOMOIDES AQUILONARIS	P. AQUILONARIS
	PRISTIPOMOIDES MACROPHTHALMUS	SNAPPER (NS)
	PROGNICHTHYS GIBBIFRONS	BLUNTNOSE FLYINGFISH
	PROMETHICHTHYS PROMETHEUS	CONEJO
4216	PROPEBELA CANCELLATA	CANCELLATE LORA
	PROSOPIUM CYLINDRACEUM QUADRILATER	WHITEFISH,ROUND
1800	PROTOCHORDATA SP.	PROTOCHORDATA SP.
133	PROTOMYCTOPHUM ARCTICUM -OBSOLETE	P. ARCTICUM
226	PROTOMYCTOPHUM ARCTICUM	P. ARCTICUM
789	PSENES MACULATUS	SILVER DRIFTFISH
822	PSENES PELLUCIDUS	PSENES PELLUCIDUS
2918	PSEUDOCALANUS ELONGATUS	P. ELONGATUS
2917	PSEUDOCALANUS SP.	PSEUDOCALANUS SP.
2721	PSEUDOMMA AFFINE	PSEUDOMMA AFFINE
2722	PSEUDOMMA TRUNCATUM	P. TRUNCATUM
435	PSEUDOPHICHTHUS SPLENDENS	P. SPLENDENS
43	PSEUDOPLEURONECTES AMERICANUS	WINTER FLOUNDER
1253	PSEUDOPLEURONECTES AMERICANUS EGGS	WINTER FLOUNDER EGGS
38	PSEUDOSCOPELUS SP.	SWALLOWERS
	PSEUDUPENEUS MACULATUS	SPOTTED GOATFISH
6128	PSILASTER ARCHASTER	P. ARCHASTER
6713	PSOLUS FABRICII	SCARLETT PSOLUS
6715	PSOLUS PHANTAPUS	PSOLUS PHANTAPUS

6710	PSOLUS SP.	PSOLUS SP.
6700	PSOLUSES,THYONES,ETC. (NS)	PSOLUSES,THYONES,ETC. (NS)
6125	PTERASTER MILITARIS	PTERASTER MILITARIS
4600	PTEROPODA	SEA BUTTERFLIES
	PTEROPSARIDAE (PERCOPHIDIDAE)	PERCOPHIDS (NS)
495	PTERYCOMBUS BRAMA	PTERYCOMBUS BRAMA
4559	PTERYGIOTEUTHIS SP.	PTERYGIOTEUTHIS SP.
4202	PUNCTURELLA NOACHINA	KEYHOLE LIMPET
362	PUNGITIUS PUNGITIUS	NINESPINE STICKLEBACK
5100	PYCNOGONIDA S.P.	SEA SPIDER
5101	PYCNOGONIDAE O.	PYCNOGONIDAE O.
5102	PYCNOGONUM LITTORALE	ANEMONE SEA SPIDER
4558	PYROTEUTHINAE S.F.	PYROTEUTHINAE S.F.
4560	PYROTEUTHIS SP.	PYROTEUTHIS SP.
	Q.CLAM BAY CHERRYSTONE	Q.CLAM BAY CHERRYSTONE
	Q.CLAM BAY CHOWDER	Q.CLAM BAY CHOWDER
	Q.CLAM BAY LITTLE NECK	Q.CLAM BAY LITTLE NECK
	RACHYCENTRIDAE	COBIAS (NS)
803	RACHYCENTRON CANADUM	COBIA
1750	RADIOLARIDA O.	RADIOLARIDA O.
	RAJA ACKLEYI	OCELLATE SKATE
212	RAJA BATHYPHILA	ABYSSAL SKATE
589	RAJA BIGELOW	RAJA BIGELOW
1224	RAJA EGGS	SKATE UNID. EGGS
206	RAJA EGLANTERIA	BRIER SKATE
203	RAJA ERINACEA	LITTLE SKATE
207	RAJA FYLLAE	ROUND SKATE
	RAJA GARMANI	SKATE,ROSETTE
210	RAJA HYPERBOREA	ARCTIC SKATE
209	RAJA JENSENI	JENSEN'S SKATE
200	RAJA LAEVIS	BARNDOOR SKATE
	RAJA LENTIGINOSA	FRECKLED SKATE
217	RAJA LINTEA	WHITE SKATE
208	RAJA MOLLIS	SOFT SKATE
204	RAJA OCELLATA	WINTER SKATE
	RAJA OLSENI	SPREADFIN SKATE
201	RAJA RADIATA	THORNY SKATE
202	RAJA SENTA	SMOOTH SKATE
205	RAJA SPINICAUDA	SPINYTAIL SKATE
	RAJA TEXANA	ROUNDEL SKATE
	RAJIDAE F.	SKATES (NS)
211	RAJIDAE F.	SKATES (NS)
	RAJIFORMES (HYPOTREMATA) O.	SKATES,RAYS,ETC.
355	REGALECUS GLESNE	REGALECUS GLESNE
31	REINHARDTIUS HIPPOGLOSSOIDES	TURBOT,GREENLAND HALIBUT
83	REMORA BRACHYPTERA	SPEARFISH REMORA
	REMORA OSTEOCHIR	MARLINSUCKER
84	REMORA REMORA	REMORA
2848	RHACHOTROPIS ACULEATA	R. ACULEATA
2847	RHACHOTROPIS INFLATA	R. INFLATA
2846	RHACHOTROPIS SP.	RHACHOTROPIS SP.
436	RHECHIAS SP.	RHECHIAS SP.
	RHINICHTHYS CATARACTAE	DACE,LONGNOSE
	RHINOBATOS LENTIGINOSUS	ATL GUITARFISH

248	RHINOCHIMAERA ATLANTICA	KNIFENOSE CHIMERA
	RHINOPTERA BONASUS	COWNOSE RAY
235	RHIZOPRIONODON TERRAENOVAE	ATL SHARPNOSE SHARK
3141	RHODINE SP.	RHODINE SP.
9304	RHODOPHYCEAE	RED SEAWEEDS
	RHOMBOPLITES AURORUBENS	VERMILION SNAPPER
5500	RHYNCHOCOELA P.	RHYNCHOCOELA P.
1931	RHYNCHONELLA SP.	RHYNCHONELLA SP.
0	RIBBON WORMS,ETC.	RIBBON WORMS,ETC.
	ROES	ROES
356	RONDELETIA LORICATA	RONDELETIA LORICATA
4523	ROSSIA HYATTI (OBSOLETE)	ROSSIA HYATTI
4526	ROSSIA MEGAPTERA	ROSSIA MEGAPTERA
4525	ROSSIA PALPEBROSA	ROSSIA PALPEBROSA
2861	ROZINANTE FRAGILIS	ROZINANTE FRAGILIS
29	RUVETTUS PRETIOSUS	OILFISH
	RYPTICUS BISTRISPINUS	FRECKLED SOAPFISH
873	RYPTICUS SP.	RYPTICUS SP.
	RYPTICUS SUBBIFRENATUS	SPOTTED SOAPFISH
1241	S/L.F.HAKE/4B ROCK. EGGS	S/L.F.HAKE/4B ROCK. EGGS
3140	SABELLA SP.	SABELLA SP.
3138	SABELLIDAE F.	SABELLIDAE F.
2421	SABINEA SEPTEMCARINATA	S. SEPTEMCARINATA
2420	SABINEA SP.	SABINEA SP.
	SACCOPHARYNGIDAE F.	GULPERS (NS)
	SACCOPHARYNGOIDEI (ORDER)	GULPERS (NS)
	SACCOPHARYNX AMPULLACEUS	GULPER (NS)
5011	SAGITTA ELEGANS	SAGITTA ELEGANS
5012	SAGITTA SP.	ARROW WORMS
69	SALMO GAIRDNERI	RAINBOW TROUT
65	SALMO SALAR	SALMON(ATLANTIC)
273	SALMO SP.	TROUTS
75	SALMO TRUTTA	BROWN TROUT
	SALMONIDAE F.	SALMON, TROUTS, ETC.
294	SALMONIFORMES O.	SALMONIFORMES
1840	SALPIDAE F.	SALPIDAE F.
76	SALVELINUS ALPINUS	ARCTIC CHAR
77	SALVELINUS FONTINALIS	BROOK TROUT
	SALVELINUS NAMAYCUSH	TROUT,LAKE
	SALVELINUS SP.	TROUTS,CHAR (NS)
3154	SAMYTHA SEXCIRRATA	SAMYTHA SEXCIRRATA
9700	SAND	SAND
	SARDA ORIENTALIS	STRIPED BONITO
188	SARDA SARDA	ATLANTIC BONITO
	SARDINELLA AURITA	SPANISH SARDINE
823	SARGOCENTRON BULLISI	SARGOCENTRON BULLISI
833	SAURIDA BRASILIENSIS	LIZARDFISH,LARGESCALE
832	SAURIDA CARRIBBEA	SAURIDA CARRIBBEA
807	SAURIDA NORMANI	SHORTJAW LIZARDFISH
3152	SCALIBREGMA INFLATUM	SCALIBREGMA INFLATUM
4431	SCAPHANDER PUNCTOSTRIATUS	GIANT CANOE BUBBLE
4110	SCAPHOPODA C.	TUSK OR TOOTHSHELLS
197	SCARIDAE F.	PARROTFISH
	SCARUS COERULEUS	BLUE PARROTFISH

786	SCHEDOPHILUS MEDUSOPHAGUS	CORNISH BLACKFISH
	SCHULTZEA BETA	SCHOOL BASS
	SCIAENIDAE F.	DRUMS,ETC.
267	SCIAENOPS OCELLATUS	RED DRUM
2414	SCLEROCRANGON BOREAS	S. BOREAS
2413	SCLEROCRANGON SP.	SCLEROCRANGON SP.
3167	SCOLOPLOS SP.	ORBINIID WORMS
170	SCOMBER JAPONICUS	CHUB MACKEREL
70	SCOMBER SCOMBRUS	MACKEREL(ATLANTIC)
1223	SCOMBER SCOMBRUS EGGS	MACKEREL EGGS
	SCOMBERESOCIDAE	SAURY (NS)
720	SCOMBERESOX SAURUS	ATL SAURY,NEEDLEFISH
189	SCOMBEROMORUS CAVALLA	KING MACKEREL
171	SCOMBEROMORUS MACULATUS	SPANISH MACKEREL
	SCOMBEROMORUS SIERRA	CERO
	SCOMBRIDAE F.	MACKERELS,TUNAS
73	SCOMBROIDEI (SUBORDER)	TUNAS, SWORDFISHES,ETC.
681	SCOPELARCHUS ANALIS	S. ANALIS
570	SCOPELARCHUS MICHAELSARSI	S. MICHAELSARSI
796	SCOPELOBERYX OPISTHOPTERUS	S. OPISTHOPTERU
494	SCOPELOBERYX ROBUSTUS	S. ROBUSTUS
795	SCOPELOGADUS BEANII	BEANS BLUEBACK
871	SCOPELOGADUS MIZOLEPIS	S. MIZOLEPIS
571	SCOPELOGADUS SP.	SCOPELOGADUS SP.
	SCOPELOSAURIDAE	SCOPELOSAURUS (NS)
489	SCOPELOSAURUS ARGENTEUS	S. ARGENTEUS
588	SCOPELOSAURUS LEPIDUS	S. LEPIDUS
850	SCOPELOSAURUS MAULI	S. MAULI
492	SCOPELOSAURUS SMITHII	S. SMITHII
572	SCOPELOSAURUS SP.	SCOPELOSAURUS (NS)
143	SCOPHTHALMUS AQUOSUS	BRILL/WINDOWPANE
1249	SCOPHTHALMUS AQUOSUS EGGS	BRILL-WINDOWPANE EGGS
	SCORPAENA AGASSIZI	LONGFIN SCORPIONFISH
	SCORPAENA BRASILIENSIS	BARBFISH
26	SCORPAENA CALCARATA	SMOOTHHEAD SCORPIONFISH
	SCORPAENA DISPAR	HUNCHBACK SCORPIONFISH
	SCORPAENA GRANDICORNIS	PLUMED SCORPIONFISH
	SCORPAENA MADERENSIS	MADERENSIS
	SCORPAENA PLUMIERI	SPOTTED SCORPIONFISH
278	SCORPAENA SP.	ROCKFISHES (NS)
280	SCORPAENIDAE F.	SCORPIONFISHES
299	SCORPAENIFORMES (ORDER)	SCORPAENIFORMES (ORDER)
	SCYLIORHINIDAE	SHARKS,CAT (NS)
	SCYLIORHINUS RETIFER	DOGFISH,CHAIN
	SCYLLARIDES NODIFER	RIDGED SLIPPER LOBSTER
8500	SCYPHOZOA C.	JELLYFISHES
283	SEBASTES FASCIATUS	LABRADOR REDFISH
20	SEBASTES MARINUS	REDFISH
21	SEBASTES MENTELLA	REDFISH, DEEP WATER
23	SEBASTES SP.	REDFISH UNSEPARATED
275	SELACHII (CHONDRICHTHYES) C.	CARTILAGINOUS FISHES
89	SELAR CRUMENOPHTHALMUS	BIGEYE SCAD
91	SELENE VOMER	ATLANTIC LOOKDOWN
4544	SELENOTEUTHIS SP.	SELENOTEUTHIS SP.
	SEMIONOTIFORMESS(ORDER)	GARS (NS)
4522	SEMIROSSIA TENERA	SEMIROSSIA TENERA
	SEMOTILUS MARGARITA	DACE,PEARL
4504	SEPIOIDEA O.	SEPIOIDEA O.
4536	SEPIOLODAE F.	SEPIOLIDAE F.
92	SERIOLA DUMERILI	GREATER AMBERJACK
	SERIOLA FASCIATA	LESSER AMBERJACK
	SERIOLA RIVOLIANA	ALMACO JACK
257	SERIOLA SP.	AMBERJACKS
74	SERIOLA ZONATA	BANDED RUDDERFISH
	SERRANICULUS PUMILIO	PYGMY SEA BASS
715	SERRANIDAE F.	SEA BASSES
	SERRANUS ANNULARIS	ORANGEBACK BASS
	SERRANUS ATROBRANCHUS	BLACKEAR BASS
	SERRANUS BALDWINI	LANTERN BASS
	SERRANUS NOTOSPILUS	SEA BASS (NS)
	SERRANUS PHOEBE	TATTLER
516	SERRANUS SP.	SERRANUS SP.
	SERRANUS SUBLIGARIUS	BELTED SANDFISH
4343	SERRIPES GROENLANDICUS	GREENLAND COCKLE
613	SERRIVOMER BEANI	STOUT SAWPALATE
638	SERRIVOMER BREVIDENTATUS	S. BREVIDENTATUS
656	SERRIVOMER SP.	SERRIVOMER SP.
8405	SERTULARIA SP.	GARLAND HYDROIDS
592	SHARK (NS)	SHARK (NS)
	SICYONIA BREVIROSTRIS	ROCK SHRIMP
4315	SILIQUA SP.	RAZOR CLAM
1240	SILVER/L.F.HAKE EGGS	SILVER/L.F.HAKE EGGS
457	SIMENCHELYINAE S.F.	EELS,SNUBNOSE (NS)
601	SIMENCHELYS PARASITICUS	SNUBNOSE SLIME EEL
8700	SIPHONOPHORA O.	SIPHONOPHORA O.
1430	SIPUNCULA (GEPHYREA) EGGS	GEPHYREANS EGGS UNID.
3700	SIPUNCULUS SP.	SIPUNCULUS SP.
4251	SKENEOPSIS SP.	SKENES
2401	SNAPPING SHRIMP (OBSOLETE)	SNAPPING SHRIMP
6121	SOLASTER ENDECA	PURPLE SUNSTAR
6123	SOLASTER PAPPOSUS	SUN STAR
	SOLEIDAE	SOLES
4346	SOLEMYA BOREALIS	SOLEMYA BOREALIS
237	SOMNIOSUS MICROCEPHALUS	GREENLAND SHARK
326	SPARIDAE F.	PORGIES (NS)
	SPARISOMA RADIANS	BUCKTOOTH PARROTFISH
	SPHOEROIDES DORSALIS	PUFFER, MARBLED
746	SPHOEROIDES MACULATUS	NORTHERN PUFFER
	SPHOEROIDES NEPHELUS	SOUTHERN PUFFER
	SPHOEROIDES PACHYGASTER	BLUNTHEAD PUFFER
827	SPHOEROIDES SP.	PUFFER
	SPHOEROIDES SPENGLERI	BANDTAIL PUFFER
	SPHOEROIDES TESTUDINEUS	CHECKERED PUFFER
	SPHYRAENA BARRACUDA	GREAT BARRACUDA
46	SPHYRAENA BOREALIS	NORTHERN SENNET
	SPHYRAENA GUACHANCHO	GUAGUANCHE
	SPHYRAENA PICUDILLA	SOUTHERN SENNET
	SPHYRAENIDAE SP.	BARRACUDA (NS)

2927	SPHYRION LUMPI	SPHYRION LUMPI
	SPHYRNA LEWINI	SCALLOPED HAMMERHEAD
	SPHYRNA MEDIA	SPHYRNA MEDIA
	SPHYRNA MOKARRAN	GREAT HAMMERHEAD
	SPHYRNA TIBURO	BONNETHEAD
	SPHYRNA TUDES	SMALLEYE HAMMERHEAD
236	SPHYRNA ZYGAENA	SMOOTH,HAMMERHEAD SHARK
	SPHYRNIDAE	SHARKS,HAMMERHEAD (NS)
3164	SPIONIDA F.	SPIONIDA F.
2311	SPIRONTOCARIS FABRICII (OBSOLETE)	S. FABRICI
2313	SPIRONTOCARIS LILJEBORGII	S. LILJEBORGII
2314	SPIRONTOCARIS MACILENTA (OBSOLETE)	S. MACILENTA
2315	SPIRONTOCARIS PHIPPSII	S. PHIPPSII
2310	SPIRONTOCARIS SP.	SPIRONTOCARIS
2316	SPIRONTOCARIS SPINUS	S. SPINUS
2535	SPIRORBIS SP.	SPIRORBIS SP.
4539	SPIRULIDAE F.	SPIRULIDAE F.
4355	SPISULA POLYNYMA	STIMPSON'S SURF CLAM
4317	SPISULA SOLIDISSIMA	BAR,SURF CLAM
274	SQUALIDAE F.	DOGFISHES (NS)
	SQUALIFORMES O.	LARGE SHARKS (NS)
573	SQUALIOLUS LATICAUDUS	S. LATICAUDUS
220	SQUALUS ACANTHIAS	SPINY DOGFISH
	SQUATINA DUMERILI	SHARK, ATL ANGEL
	SQUATINIDAE	SHARKS,ANGEL (NS)
4527	STAUROTEUTHIDAE F.	S. F.
6217	STEGOPHIURA NODOSA	S. NODOSA
	STELLIFER LANCEOLATUS	STAT DRUM
876	STEMONOSUDIS INTERMEDIA	S. INTERMEDIA
2815	STENOTHOE BREVICORNIS	S. BREVICORNIS
	STENOTOMUS CAPRINUS	LONGSPINE PORGY
102	STENOTOMUS CHRYSOPS	SCUP
	STEPHANOBERYCOIDEI O.	OGREFISHES(NS)
	STEPHANOBERYCOIDEI O.	OGREFISHES(NS)
	STEPHANOBERYCOIDEI O.	OGREFISHES(NS)
6	STEPHANOLEPIS HISPIDUS	PLANEHEAD FILEFISH
3165	STERNASPIS SCUTATA	S. SCUTATA
3105	STERNASPIS SP.	STERNASPIS SP.
741	STERNOPTYCHIDAE F.	HATCHETFISH
709	STERNOPTYX DIAPHANA	TRANSPARENT HATCHETFISH
639	STICHAEIDAE F.	PRICKLEBACKS
624	STICHAEUS PUNCTATUS	ARCTIC SHANNY
2733	STILOMYSIS GRANDIS	S. GRANDIS
825	STOMIAS AFFINIS	STOMIAS AFFINIS
159	STOMIAS BOA FEROX	BOA DRAGONFISH
574	STOMIAS BREVIBARBATUS	S. BREVIBARBATUS
756	STOMIAS SP.	DRAGONFISH UNID
151	STOMIATIDAE	STOMIATOID UNID.
680	STOMIATIFORMES (ORDER)	STOMIATIFORMES
8313	STOMPHIA COCCINEA	STOMPHIA COCCINEA
9200	STONES AND ROCKS	STONES AND ROCKS
	STROMATEIDAE	BUTTERFISH (NS)
	STROMATEOIDEI (SUBORDER)	RUFFS (NS)
4335	STROMBUS AND BUSYCON SP.	CONCHS
6411	STRONGYLOCENTROTUS DROEBACHIENSIS	S. DROEBACHIENSIS
6412	STRONGYLOCENTROTUS ECHINOIDES	S. ECHINOIDES
6400	STRONGYLOCENTROTUS SP.	SEA URCHINS
259	STRONGYLURA MARINA	ATL NEEDLEFISH
575	STYLEPHORUS CHORDATUS	S. CHORDATUS
691	SUDIS HYALINA	SUDIS HYALINA
297	SVETOVIDOVIA SP.	SVETOVIDOVIA SP.
	SWORDFISH LIVERS	SWORDFISH LIVERS
	SYACIUM GUNTERI	SHOAL FLOUNDER
282	SYACIUM MICRURUM	CHANNEL FLOUNDER
	SYACIUM PAPILLOSUM	FLOUNDER,DUSKY
198	SYACIUM SP.	CHANNEL FLOUNDER
	SYGNATHUS FUSCUS	PIPEFISH,NORTHERN
3126	SYLLIDAE F.	SYLLIDAE F.
279	SYMBOLOPHORUS SP.	SYMBOLOPHORUS SP.
184	SYMBOLOPHORUS VERANYI	LARGESCALE LANTERNFISH
	SYMPHURUS CIVITATUS	OFFSHORE TONGUEFISH
	SYMPHURUS DIOMEDIANUS	TONGUEFISH,SPOT FINNED
	SYMPHURUS MARGINATUS	TONGUEFISH
	SYMPHURUS MARGINATUS	TONGUEFISH
693	SYMPHURUS MINOR	LARGESCALE TONGUEFISH
	SYMPHURUS PLAGIUSA	BLACKCHEEK TONGUEFISH
816	SYMPHURUS PTEROSPILOTUS	TONGUE FISH
	SYMPHURUS PUSILLUS	NORHTERN TONGUEFISH
805	SYMPHURUS SP.	TONGUEFISH
	SYMPHURUS UROSPILUS	SPOTTAIL TONGUEFISH
381	SYMPHYSANODON SP.	SYMPHYSANODON SP.
576	SYNAGROPS BELLA	BLACKMOUTH BASS
673	SYNAGROPS SPINOSA	SYNAGROPS SPINOSA
455	SYNAPHOBRANCHIDAE F.	EELS, CUTTHROAT (NS)
456	SYNAPHOBRANCHINAE S.F.	SYNAPHOBRANCHINAE S.F.
602	SYNAPHOBRANCHUS KAUPI	GRAY'S CUTTHROAT EEL
	SYNGNATHIDAE	PIPEFISHES (NS)
	SYNGNATHOIDEI (AULOSTOMI) (ORDER)	SEAHORSES,ETC.
675	SYNGNATHUS DUNCKERI	PUGNOSE PIPEFISH
	SYNGNATHUS FLORIDAE	DUSKY PIPEFISH
702	SYNGNATHUS FUSCUS	NORTHERN PIPEFISH
	SYNGNATHUS LOUISIANAE	CHAIN PIPEFISH
703	SYNGNATHUS PELAGICUS	PELAGIC PIPEFISH
759	SYNGNATHUS SP.	PIPEFISH UNIDEN.
676	SYNGNATHUS SPRINGERI	BULL PIPEFISH
2985	SYNIDOTEA NODULOSA	S. NODULOSA
339	SYNODONTIDAE F.	LIZARDFISHES
	SYNODUS FOETENS	LIZARDFISH,INSHORE
	SYNODUS INTERMEDIUS	SAND DIVER
	SYNODUS POEYI	LIZARDFISH,OFFSHORE
812	SYNODUS SP.	SYNODUS SP.
808	SYNODUS SYNODUS	RED LIZARDFISH
2851	SYRRHOE SP.	SYRRHOE SP.
185	TAANINGICHTHYS BATHYPHILUS	T. BATHYPHILUS
186	TAANINGICHTHYS MINIMUS	T. MINIMUS
2940	TANAIDAE F.	TANAIDAE F.
4590	TAONIINAE S.F.	TAONIINAE S.F.
4591	TAONIUS SP.	TAONIUS SP.

96	TARACTICHTHYS LONGIPINNIS	BIGSCALE POMFRET
53	TAUTOGA ONITIS	TAUTOG
122	TAUTOGOLABRUS ADSPERSUS	CUNNER
1232	TAUTOGOLABRUS ADSPERSUS EGGS	CUNNER EGGS
8315	TEALIA FELINA	TEALIA FELINA
4303	TELLINA SP.	TELLINA SP.
4370	TELLINIDAE F.	TELLINIDAE F.
2936	TEMORA LONGICORNIS	T. LONGICORNIS
2919	TEMORA SP.	TEMPORA SP.
3160	TEREBELLIDAE F.	TEREBELLIDAE F.
3151	TEREBELLIDES STROEMI	T. STROEMI
1932	TEREBRATULINA SP.	TEREBRATULINA SP.
	TETRAGONURIDAE	SQUARETAILS (NS)
	TETRAGONURIDAE	SQUARETAILS (NS)
790	TETRAGONURUS ATLANTICUS	BIGEYE SQUARETAIL
791	TETRAGONURUS CUVIERI	SMALLEYE SQUARETAIL
	TETRAODONTIDAE	PUFFERS (NS)
	TETRAODONTIFORMES (PLECTOGNATHI)	CORAL REEF FISH
	TETRAPTURUS ANGUSTIROSTRIS	SHORTBILL SPEARFISH
	TETRAPTURUS AUDAX	STRIPED MARLIN
840	TETRAPTURUS PFLUEGERI	LONGBILL SPEARFISH
4571	TETRONYCHOTEUTHIS SP.	T. SP.
4501	TEUTHOIDEA O.	TEUTHOIDEA O.
4592	TEUTHOWENIA SP.	TEUTHOWENIA SP.
2565	THALASSINIDAE S.F.	MUD SHRIMP
372	THALASSOMA BIFASCIATUM	T. BIFASCIATUM
1845	THALIACEA C.	THALIACEA C.
9300	THALLOPHYTA C.	SEAWEED,(ALGAE),KELP
2606	THECOSOMATA O.	THECOSOMATA O.
3191	THELEPUS CINCINNATUS	THELEPUS CINCINNATUS
4557	THELIDIOTEUTHIS SP.	THELIDIOTEUTHIS SP.
3312	THEMISTE SP.	THEMISTE SP.
3180	THRACIIDAE F.	THRACIIDAE F.
190	THUNNUS ALALUNGA	ALBACORE TUNA
191	THUNNUS ALBACARES	YELLOWFIN TUNA
	THUNNUS ATLANTICUS	BLACKFIN TUNA
192	THUNNUS OBESUS	BIGEYE TUNA
321	THUNNUS SP.	THUNNUS SP.
71	THUNNUS THYNNUS	BLUEFIN TUNA
4302	THYASIRA SP.	THYASIRA SP.
4333	THYASIRIDAE F.	THYASIRIDAE F.
6714	THYONE SP.	THYONE SP.
6712	THYONE UNISEMITA	THYONE UNISEMITA
2624	THYSANOESSA ACUTIFRONS	T. ACUTIFRONS
2622	THYSANOESSA INERMIS	T. INERMIS
2623	THYSANOESSA LONGICAUDATA	T. LONGICAUDATA
2621	THYSANOESSA RASCHII	T. RASCHII
2620	THYSANOESSA SP.	THYSANOESSA SP.
491	TILUROPSIS SP.	TILUROPSIS SP.
2828	TIRON SP.	TIRON SP.
2850	TIRONIDAE F.	TIRONIDAE F.
2837	TMETONYX CICADA	TMETONYX CICADA
2832	TMETONYX SP.	TMETONYX SP.
3134	TOMOPTERIDAE F.	TOMOPTERIDAE F.

4713	TONICELLA RUBRA	RED NORTHERN CHITON
	TORPEDINIDAE	TORPEDOES (NS)
	TORPEDINIFORMES (ORDER)	RAYS,ELECTRIC (NS)
216	TORPEDO NOBILIANA	ATLANTIC TORPEDO
	TRACHICHTHYIDAE	SLIMEHEADS (NS)
801	TRACHINOCEPHALUS MYOPS	SNAKEFISH
261	TRACHINOTUS CAROLINUS	COMMON POMPANO
	TRACHINOTUS FALCATUS	PERMIT
	TRACHINOTUS GOODEI	PALOMETA
	TRACHIPTERIDAE	RIBBONFISHES (NS)
	TRACHIPTERUS ARTICUS	DEALFISH
269	TRACHURUS LATHAMI	ROUGH SCAD
269	TRACHURUS LATHAMI	ROUGH SHAD
93	TRACHURUS TRACHURUS	HORSE MACKEREL
412	TRACHYRHYNCHUS MURRAYI	ROUGHNOSE GRENADIER
358	TRACHYSCORPIA CRISTULATA	ATL THORNYHEAD
3179	TRAVISIA CARNEA	TRAVISIA CARNEA
7600	TREMATODA C.	TREMATODA C.
4530	TREMOCTOPODIDAE F.	TREMOCTOPODIDAE F.
	TRIACANTHIDAE	SPIKEFISHES (NS)
	TRIAKIS SEMIFASCIATA	LEOPARD SHARK
689	TRICHIURIDAE F.	CUTLASSFISHES (NS)
689	TRICHIURIDAE F.	CUTLASSFISHES (NS)
	TRICHIURUS LEPTURUS	ATL CUTLASSFISH
333	TRICHOPSETTA ORBISULCUS	T. ORBISULCUS
277	TRICHOPSETTA SP.	TRICHOPSETTA SP.
329	TRIGLIDAE F.	SEAROBINS
304	TRIGLOPS MURRAYI	MAILED SCULPIN
305	TRIGLOPS NYBELINI	NYBELIN S SCULPIN
317	TRIGLOPS PINGELI	RIBBED SCULPIN
309	TRIGLOPS SP.	SCULPIN (NS)
721	TRIGONOLAMPA MIRICEPS	3LIGHT DRAGONFISH
	TRINECTES MACULATUS	HOGCHOKER
	TRISOPTERUS ESMARKI	NORWAY POUT
4255	TROCHIDAE F.	TOP SHELLS
	TUNA LIVERS	TUNA LIVERS
1810	TUNICATA S.P.	TUNICATA S.P.
7500	TURBELLARIA C.	TURBELLARIA C.
4229	TURRITELLOPSIS SP.	TURRITELLOPSIS SP.
931	TURSIOPS TRUNCATUS	ATL BOTTLENOSED DOLPHIN
	TYLOSURUS CROCODILUS	HOUNDFISH
9302	ULVA SP.	SEA LETTUCE
625	ULVARIA SUBBIFURCATA	RADIATED SHANNY
2839	UNCIOLA INERMIS	UNCIOLA INERMIS
2537	UNCIOLA IRRORATA	UNCIOLA IRRORATA
2823	UNCIOLA SP.	RED AMPHI
9003	UNID FISH AND EGGS	UNID FISH AND EGGS
9001	UNID FISH AND INVERTEBRATES	UNID INVERTEBRATES
9002	UNID FISH AND REMAINS	UNID REMAINS
9000	UNID REMAINS,DIGESTED	UNID REMAINS
90	UNID. FISH (any size or age)	UNID. FISH
	UNSP. FRESHWATER FISH	UNSP. FRESHWATER FISH
	UNSPECIFIED LIVERS	UNSPEC LIVERS
	UPENEUS PARVUS	DWARF GOATFISH

	URANOSCOPIDAE	STARGAZERS (NS)
	URASPIS SECUNDA	COTTONMOUTH JACK
437	UROCONGER SP.	UROCONGER SP.
438	UROCONGER SYRINGINUS	U. SYRINGINUS
	UROLOPHUS JAMAICENSIS	YELLOW STINGRAY
13	UROPHYCIS CHUSS	SQUIRREL OR RED HAKE
	UROPHYCIS EARLLI	CAROLINA HAKE
	UROPHYCIS FLORIDANA	SOUTHERN HAKE
111	UROPHYCIS REGIUS	SPOTTED HAKE
193	UROPHYCIS SP.	HAKE (NS)
1246	UROPHYCIS SP. EGGS	HAKE EGGS
12	UROPHYCIS TENUIS	WHITE HAKE
1233	UROPHYCIS TENUIS EGGS	WHITE HAKE EGGS
679	VALENCIENNELLUS TRIPUNCTULATUS	V. TRIPUNCTULATUS
4535	VAMPYROTEUTHIDAE F.	VAMPYROTEUTHIDAE F.
4252	VELUTINA LAEVIGATA	VELVET SHELL
4344	VENERICARDIA BOREALIS	HEART SHELL
4329	VENERIDAE F.	VENERIDAE F.
4311	VENUS MERCENARIA (OBSOLETE)	QUAHAUG
671	VINCIGUERRIA ATTENUATA	V. ATTENUATA
684	VINCIGUERRIA NIMBARIA	V. NIMBARIA
667	VINCIGUERRIA POWERIAE	V. POWERIAE
348	VINCIGUERRIA SP.	VINCIGUERRIA SP.
94	VOMER SETAPINNIS	ATLANTIC MOONFISH
9600	WATER	WATER
480	XENOCONGRIDAE F.	XENOCONGRIDAE F.
725	XENODERMICHTHYS COPEI	ATLANTIC GYMNAST
777	XENOLEPIDICHTHYS AMERICANUS	GRAMMICOLEPID
866	XENOLEPIDICHTHYS DALGLEISHI	X. DALGLEISHI
72	XIPHIAS GLADIUS	SWORDFISH
	XIPHIIDAE	SWORDFISHES (NS)
4356	YOLDIA SAPOTILLA	Y. SAPOTILLA
4354	YOLDIA SP.	YOLDIA SP.
	ZEIDAE	DORIES (NS)
	ZEIFORMES O.	DORIES,ETC.
577	ZENION HOLOLEPIS	Z. HOLOLEPIS
704	ZENOPSIS OCELLATA	AMER. JOHN DORY
598	ZOARCIDAE F.	EELPOUTS (NS)

SPECIES CODES

Sorted numerically (by code)

This file is an edited version of the above listing.

	scientific	common
1	ALUTERUS SCHOEPFI	ORANGE FILEFISH
2	ALUTERUS SCRIPTUS	FILEFISH,SCRAWLED
3	BALISTES CAPRISCUS	GRAY TRIGGERFISH
4	BALISTES VETULA	QUEEN TRIGGERFISH
5	MONACANTHUS CILIATUS	FRINGED FILEFISH
6	STEPHANOLEPIS HISPIDUS	PLANEHEAD FILEFISH
7	MENTICIRRHUS SAXATILIS	NORTHERN KINGFISH
8	BOTHUS SP.	BOTHUS SP.
9	ENGRAULIS EURYSTOLE	SILVER ANCHOVY
10	GADUS MORHUA	COD(ATLANTIC)
11	MELANOGRAMMUS AEGLEFINUS	HADDOCK
12	UROPHYCIS TENUIS	WHITE HAKE
13	UROPHYCIS CHUSS	SQUIRREL OR RED HAKE
14	MERLUCCIUS BILINEARIS	SILVER HAKE
15	BROSME BROSME	CUSK
16	POLLACHIUS VIRENS	POLLOCK
17	MICROGADUS TOMCOD	TOMCOD(ATLANTIC)
18	HAKE UNID.	HAKE (NS)
19	MERLUCCIUS ALBIDUS	OFF-SHORE HAKE
20	SEBASTES MARINUS	REDFISH
21	SEBASTES MENTELLA	REDFISH, DEEP WATER
22	BONAPARTIA PEDIOLOTA	B. PEDIOLOTA
23	SEBASTES SP.	REDFISH UNSEPARATED
24	MORONE SAXATILIS	STRIPED BASS
25	LOPHOLATILUS CHAMAELEONTICEPS	TILE FISH
26	SCORPAENA CALCARATA	SMOOTHHEAD SCORPIONFISH
27	LEPIDOCYBIUM FLAVOBRUNNEUM	ESCOLAR
28	NEALOTUS TRIPES	NEALOTUS TRIPES
29	RUVETTUS PRETIOSUS	OILFISH
30	HIPPOGLOSSUS HIPPOGLOSSUS	HALIBUT(ATLANTIC)
31	REINHARDTIUS HIPPOGLOSSOIDES	TURBOT,GREENLAND HALIBUT
32	MAKAIRA ALBIDA	WHITE MARLIN
33	MAKAIRA NIGRICANS	BLUE MARLIN
34	ENGRAULIDAE F.	ANCHOVIES
35	MERLUCCIUS SP.	HAKE
36	LABRIDAE F.	WRASSES
37	ECHIODON DAWSONI	PEARLFISH,CHAIN
38	PSEUDOSCOPELUS SP.	SWALLOWERS
39	CHIASMODON NIGER	BLACK SWALLOWER
40	HIPPOGLOSSOIDES PLATESSOIDES	AMERICAN PLAICE
41	GLYPTOCEPHALUS CYNOGLOSSUS	WITCH FLOUNDER
42	LIMANDA FERRUGINEA	YELLOWTAIL FLOUNDER
43	PSEUDOPLEURONECTES AMERICANUS	WINTER FLOUNDER
44	CITHARICHTHYS ARCTIFRONS	GULF STREAM FLOUNDER
45	BOTHUS OCELLATUS	EYED FLOUNDER
46	SPHYRAENA BOREALIS	NORTHERN SENNET
47	MUGIL CUREMA	WHITE MULLET
48	MUGIL CEPHALUS	STRIPED MULLET
49	PLEURONECTIDAE F.	FLOUNDER UNID
50	ANARHICHAS LUPUS	STRIPED ATL WOLFFISH
51	ANARHICHAS MINOR	SPOTTED WOLFFISH
52	ANARHICHAS DENTICULATUS	NORTHERN WOLFFISH
53	TAUTOGA ONITIS	TAUTOG
54	ABUDEFDUF SAXATILIS	SERGEANT MAJOR
55	MOLVA MOLVA	EUROPEAN LING
56	MOLVA DYPTERYGIA	BLUE LING
57	PHYCINAE S.F.	PHYCINAE S.F.
58	ANCHOA HEPSETUS	STRIPED ANCHOVY
59	ANARHICHADIDAE F.	WOLFFISH,UNIDENT.

60	CLUPEA HARENGUS	HERRING(ATLANTIC)
61	ALOSA SAPIDISSIMA	SHAD AMERICAN
62	ALOSA PSEUDOHARENGUS	ALEWIFE
63	OSMERUS MORDAX	RAINBOW SMELT
64	MALLOTUS VILLOSUS	CAPELIN
65	SALMO SALAR	SALMON(ATLANTIC)
66	COREGONUS CLUPEAFORMIS	LAKE WHITEFISH
67	COREGONUS CANADENSIS	ATL WHITEFISH
68	ONCORHYNCHUS GORBUSCHA	PINK SALMON
69	SALMO GAIRDNERI	RAINBOW TROUT
70	SCOMBER SCOMBRUS	MACKEREL(ATLANTIC)
71	THUNNUS THYNNUS	BLUEFIN TUNA
72	XIPHIAS GLADIUS	SWORDFISH
73	SCOMBROIDEI (SUBORDER)	TUNAS, SWORDFISHES,ETC.
74	SERIOLA ZONATA	BANDED RUDDERFISH
75	SALMO TRUTTA	BROWN TROUT
76	SALVELINUS ALPINUS	ARCTIC CHAR
77	SALVELINUS FONTINALIS	BROOK TROUT
78	COOKEOLUS BOOPS	BULLEYE
79	PRIACANTHUS CRUENTATUS	GLASSEYE SNAPPER
80	DECAPTERUS PUNCTATUS	ROUND SCAD
81	POMATOMUS SALTATRIX	BLUEFISH
82	ECHENEIS NAUCRATES	SHARKSUCKER
83	REMORA BRACHYPTERA	SPEARFISH REMORA
84	REMORA REMORA	REMORA
85	CARANX CRYSOS	BLUE RUNNER
86	CARANX HIPPOS	CREVALLE JACK
87	DECAPTERUS MACARELLUS	MACKEREL SCAD
88	NAUCRATES DUCTOR	PILOTFISH
89	SELAR CRUMENOPHTHALMUS	BIGEYE SCAD
90	UNID. FISH (any size or age)	UNID. FISH
91	SELENE VOMER	ATLANTIC LOOKDOWN
92	SERIOLA DUMERILI	GREATER AMBERJACK
93	TRACHURUS TRACHURUS	HORSE MACKEREL
94	VOMER SETAPINNIS	ATLANTIC MOONFISH
95	BRAMA BRAMA	ATLANTIC POMFRET
96	TARACTICHTHYS LONGIPINNIS	BIGSCALE POMFRET
97	CARISTIUS GROENLANDICUS	GREENLAND MANEFISH
98	LUTJANUS SP.	LUTJANUS SP.
99	ARCHOSARGUS PROBATOCEPHALUS	SHEEPSHEAD
100	FINFISHES (NS)	FINFISHES (NS)
101	GADOIDEI S.O.	GADOIDS
102	STENOTOMUS CHRYSOPS	SCUP
103	CYNOSCION REGALIS	WEAKFISH
104	POGONIAS CROMIS	BLACK DRUM
105	MULLUS AURATUS	RED GOATFISH
106	KYPHOSUS SECTATRIX	BERMUDA CHUB
107	CHAETODON OCELLATUS	SPOTFIN BUTTERFLYFISH
108	LEPIDION EQUES	LEPIDION EQUES
109	HALARGYREUS JOHNSONII	DAINTY MORA
109	HALARGYREUS JOHNSONII	DAINTY MORA
110	BOREOGADUS SAIDA	ARCTIC COD
111	UROPHYCIS REGIUS	SPOTTED HAKE
112	PHYCIS CHESTERI	LONGFIN HAKE
113	ANTIMORA ROSTRATA	BLUE ANTIMORA/HAKE
114	ENCHELYOPUS CIMBRIUS	FOURBEARD ROCKLING
115	GAIDROPSARUS ENSIS	THREEBEARD ROCKLING
116	GAIDROPSARUS ARGENTATUS	SILVER ROCKLING
117	MICROMESISTIUS POUTASSOU	BLUE WHITING
118	GADUS OGAC	GREENLAND COD
119	GAIDROPSARUS SP.	ROCKLING UNIDENTIFIED
120	MORONE AMERICANA	WHITE PERCH
121	CENTROPRISTIS STRIATA	SOUTHERN SEA BASS
122	TAUTOGOLABRUS ADSPERSUS	CUNNER
123	HELICOLENUS DACTYLOPTERUS	ROSEFISH(BLACK BELLY)
124	CENTROBRANCHUS NIGRO-OCELLATUS	C. NIGRO-OCELLATUS
125	DIAPHUS EFFULGENS	DIAPHUS EFFULGENS
126	DIAPHUS PERSPICILLATUS	D. PERSPICILLATUS
127	DIAPHUS LUETKENI	DIAPHUS LUETKENI
128	DIAPHUS MOLLIS	DIAPHUS MOLLIS
129	DIAPHUS RAFINESQUII	D. RAFINESQUII
130	DIAPHUS TERMOPHILUS	D. TERMOPHILUS
131	ELECTRONA RISSOI	ELECTRONA RISSOI
132	GONICHTHYS COCCOI	COCCO'S LANTERNFISH
133	PROTOMYCTOPHUM ARCTICUM -OBSOLETE	P. ARCTICUM
134	HYGOPHUM BENOITI	BENOIT'S LANTERNFISH
135	HYGOPHUM HYGOMI	HYGOPHUM HYGOMI
136	HYGOPHUM MACROCHIR	HYGOPHUM MACROCHIR
137	LAMPADENA LUMINOSA	L. NITIDA
138	LAMPADENA SPECULIGERA	MIRROR LANTERNFISH
138	LAMPADENA SPECULIGERA	MIRROR LANTERNFISH
139	LAMPANYCTUS ALATUS	L. ALATUS
140	LIOPSETTA PUTNAMI	SMOOTH FLOUNDER
141	PARALICHTHYS DENTATUS	SUMMER FLOUNDER
142	PARALICHTHYS OBLONGUS	FOURSPOT FLOUNDER
143	SCOPHTHALMUS AQUOSUS	BRILL/WINDOWPANE
144	LAMPANYCTUS CROCODILUS	JEWEL LANTERNFISH
145	LAMPANYCTUS FESTIVUS	L. FESTIVUS
146	LAMPANYCTUS MACDONALDI	L. MACDONALDI
147	LAMPANYCTUS PUSILLUS	L. PUSILLUS
148	BATHYPTEROIS DUBIUS	NOTCH FEELERFISH
149	PARASUDIS TRUCULENTA	LONGNOSE GREENEYE
150	MYCTOPHIDAE	LANTERNFISH (NS)
151	STOMIATIDAE	STOMIATOID UNID.
152	DIAPHUS DUMERILII	LANTERNFISH
153	ARGENTINOIDEI S.O.	ARGENTINOID (NS)
154	CYCLOTHONE MICRODON	VEILED ANGLE MOUTH
155	GONOSTOMA ELONGATUM	LONGTOOTH ANGLEMOUTH
156	CHLOROPHTHALMUS AGASSIZI	SHORT-NOSE GREENEYE
157	BENTHOSEMA GLACIALE	GLACIER LANTERNFISH
158	MAUROLICUS MUELLERI	MULLER'S PEARLSIDES
159	STOMIAS BOA FEROX	BOA DRAGONFISH
160	ARGENTINA SILUS	ARGENTINE (ATL)
161	ARGENTINA STRIATA	STRIATED ARGENTINE
162	NANSENIA GROENLANDICA	ARGENTINE.LARGE-EYED
163	CERATOSCOPELUS MADERENSIS	LANTERNFISH,HORNED
164	BREVOORTIA TYRANNUS	MENHADEN(ATLANTIC)
165	ALOSA AESTIVALIS	BLUEBACK HERRING

166	ETRUMEUS TERES	ROUND HERRING
167	MEGALOPS ATLANTICUS	TARPON
168	DIAPHUS METOPOCLAMPUS	HEADLIGHT FISH
169	CHAULIODUS SLOANI	VIPERFISH
170	SCOMBER JAPONICUS	CHUB MACKEREL
171	SCOMBEROMORUS MACULATUS	SPANISH MACKEREL
172	EUTHYNNUS PELAMIS	STRIPED BONITO/SKIPJACK
173	EUTHYNNUS ALLETTERATUS	FALSE ALBACORE
174	CARANGIDAE	JACK
175	ALBULA VULPES	BONEFISH
176	BATHYLAGUS EURYOPS	GOITRE BLACKSMELT
177	MALACOSTEUS NIGER	LOOSEJAW
178	LOBIANCHIA GEMELLERII	LOBIANCHIA GEMELLERII
179	MYCTOPHUM AFFINE	METALLIC LANTERNFISH
180	MYCTOPHUM PUNCTATUM	SPOTTED LANTERNFISH
181	NOTOLYCHNUS VALDIVIAE	N. VALDIVIAE
182	NOTOSCOPELUS ELONGATUS KROYERI	LANTERNFISH KROYER'S
183	NOTOSCOPELUS RESPLENDENS	LANTERNFISH PATCHWORK
184	SYMBOLOPHORUS VERANYI	LARGESCALE LANTERNFISH
185	TAANINGICHTHYS BATHYPHILUS	T. BATHYPHILUS
186	TAANINGICHTHYS MINIMUS	T. MINIMUS
187	AUXIS THAZARD	FRIGATE MACKEREL
188	SARDA SARDA	ATLANTIC BONITO
189	SCOMBEROMORUS CAVALLA	KING MACKEREL
190	THUNNUS ALALUNGA	ALBACORE TUNA
191	THUNNUS ALBACARES	YELLOWFIN TUNA
192	THUNNUS OBESUS	BIGEYE TUNA
193	UROPHYCIS SP.	HAKE (NS)
194	MORIDAE	MORAS
195	ENCHELYOPUS/UROPHYCIS SP.	ROCKLING HAKE
196	BOTHIDAE F.	LEFTEYE FLOUNDER
197	SCARIDAE F.	PARROTFISH
198	SYACIUM SP.	CHANNEL FLOUNDER
199	LABROIDEI S.O.	LABROIDEI S.O.
200	RAJA LAEVIS	BARNDOOR SKATE
201	RAJA RADIATA	THORNY SKATE
202	RAJA SENTA	SMOOTH SKATE
203	RAJA ERINACEA	LITTLE SKATE
204	RAJA OCELLATA	WINTER SKATE
205	RAJA SPINICAUDA	SPINYTAIL SKATE
206	RAJA EGLANTERIA	BRIER SKATE
207	RAJA FYLLAE	ROUND SKATE
208	RAJA MOLLIS	SOFT SKATE
209	RAJA JENSENI	JENSEN'S SKATE
210	RAJA HYPERBOREA	ARCTIC SKATE
211	RAJIDAE F.	SKATES (NS)
212	RAJA BATHYPHILA	ABYSSAL SKATE
213	DASYATIS CENTROURA	ROUGHTAIL STINGRAY
214	MYLIOBATIFORMES O. (NS)	RAYS (NS)
215	ODONTASPIS TAURUS	SHARK,SAND
216	TORPEDO NOBILIANA	ATLANTIC TORPEDO
217	RAJA LINTEA	WHITE SKATE
218	DASYATIS VIOLACEA	PELAGIC STINGRAY
219	BATOIDEA S.O.	SKATES AND RAYS (NS)
220	SQUALUS ACANTHIAS	SPINY DOGFISH
221	CENTROSCYLLIUM FABRICII	BLACK DOGFISH
222	MUSTELUS CANIS	SMOOTH DOGFISH
223	CENTROSCYMNUS COELOLEPIS	PORTUGUESE SHARK
224	ETMOPTERUS PRINCEPS	ROUGH SAGRE
225	MANTA BIROSTRIS	ATLANTIC MANTA
226	PROTOMYCTOFHUM ARCTICUM	P. ARCTICUM
227	NOTOSCOPELUS SP.	NOTOSCOPELUS SP.
228	LEPIDOPHANES GUENTHERI	L. GUENTHERI
229	DIAPHUS SP.	DIAPHUS SP.
230	LAMNA NASUS	PORBEAGLE,MACKEREL SHARK
231	PRIONACE GLAUCA	BLUE SHARK
232	CARCHARODON CARCHARIAS	WHITE SHARK
233	CETORHINUS MAXIMUS	BASKING SHARK
234	ALOPIAS VULPINUS	THRESHER SHARK
235	RHIZOPRIONODON TERRAENOVAE	ATL SHARPNOSE SHARK
236	SPHYRNA ZYGAENA	SMOOTH,HAMMERHEAD SHARK
237	SOMNIOSUS MICROCEPHALUS	GREENLAND SHARK
238	ISURUS OXYRINCHUS	SHORTFIN MAKO
239	APRISTURUS PROFUNDORUM	DEEPSEA CAT SHARK
240	PETROMYZON MARINUS	SEA LAMPREY
241	MYXINE GLUTINOSA	NORTHERN HAGFISH
242	HYDROLAGUS AFFINIS	DEEPWATER CHIMAERA
243	ACIPENSER OXYRHYNCHUS	AMER. ATL. STURGEON
244	CARCHARHINUS LONGIMANUS	OCEANIC WHITETIP SHARK
245	CARCHARHINUS MILBERTI	SANDBAR SHARK
246	CARCHARHINUS OBSCURUS	DUSKY SHARK
247	HARRIOTTA RALEIGHANA	LONGNOSE CHIMERA
248	RHINOCHIMAERA ATLANTICA	KNIFENOSE CHIMERA
249	ACIPENSER BREVIROSTRUM	SHORTNOSE STURGEON
250	LEPISOSTEUS OSSEUS	LONGNOSE GAR
251	GADIDAE F.	GADOIDS (COD)
252	LAMPANYCTUS SP.	LAMPANYCTUS SP.
253	GROUNDFISH (NS)	GROUNDFISH (NS)
254	ANCHOA MITCHILLI	BAY ANCHOVY
255	ISTIOPHORUS PLATYPTERUS	SAILFISH
256	PELAGIC FISH (NS)	PELAGIC FISH (NS)
257	SERIOLA SP.	AMBERJACKS
258	MICROPOGONIAS UNDULATUS	ATLANTIC CROAKER
259	STRONGYLURA MARINA	ATL NEEDLEFISH
260	OPISTHONEMA OGLINUM	ATL THREAD HERRING
261	TRACHINOTUS CAROLINUS	COMMON POMPANO
262	DOROSOMA CEPEDIANUM	GIZZARD SHAD
263	POMADASYIDAE F.	GRUNTS (GRUNTERS)
264	ALOSA MEDIOCRIS	HICKORY SHAD
265	MUGILIDAE F.	MULLETS
266	ORTHOPRISTIS CHRYSOPTERA	PIGFISH
267	SCIAENOPS OCELLATUS	RED DRUM
268	PAGRUS PAGRUS	RED PORGY
269	TRACHURUS LATHAMI	ROUGH SHAD
269	TRACHURUS LATHAMI	ROUGH SCAD
270	LEIOSTOMUS XANTHURUS	SPOT CROAKER
271	CYNOSCION NEBULOSUS	SPOTTED WEAKFISH
272	ACIPENSERIDAE F.	STURGEONS

273	SALMO SP.	TROUTS
274	SQUALIDAE F.	DOGFISHES (NS)
275	SELACHII (CHONDRICHTHYES) C.	CARTILAGINOUS FISHES
276	BATHYLAGIDAE F.	DEEPSEA SMELTS (NS)
277	TRICHOPSETTA SP.	TRICHOPSETTA SP.
278	SCORPAENA SP.	ROCKFISHES (NS)
279	SYMBOLOPHORUS SP.	SYMBOLOPHORUS SP.
280	SCORPAENIDAE F.	SCORPIONFISHES
281	ALOSA SP.	ALOSA SP.
282	SYACIUM MICRURUM	CHANNEL FLOUNDER
283	SEBASTES FASCIATUS	LABRADOR REDFISH
284	LAMPANYCTUS ATER	L. ATER
285	NAUCRATES SP.	NAUCRATES SP.
286	BENTHOSEMA SP.	BENTHOSEMA SP.
287	NOTOSCOPELUS BOLINI	N. BOLINI
288	ARGENTINIDAE F.	ARGENTINES (NS)
289	CAULOLATILUS SP.	CAULOLATILUS SP.
290	CLUPEIDAE/OSMERIDAE F.	HERRING/CAPELIN LIKE
291	BATHYLAGUS COMPSUS	B. COMPSUS
292	BOLINICHTHYS PHOTOTHORAX	B. PHOTOTHORAX
293	CERATOSCOPELUS SP.	CERATOSCOPELUS SP.
294	SALMONIFORMES O.	SALMONIFORMES
295	BATHYLAGUS SP.	BATHYLAGUS
296	GEMPYLIDAE F.	SNAKE MACKERELS (NS)
297	SVETOVIDOVIA SP.	SVETOVIDOVIA SP.
298	LOPHIIFORMES O.	LOPHIIFORMES
299	SCORPAENIFORMES (ORDER)	SCORPAENIFORMES (ORDER)
300	MYOXOCEPHALUS OCTODECEMSPINOSUS	LONGHORN SCULPIN
301	MYOXOCEPHALUS SCORPIUS	SHORTHORN SCULPIN
302	GYMNOCANTHUS TRICUSPIS	ARCTIC STAGHORN SCULPIN
303	MYOXOCEPHALUS AENEUS	GRUBBY(LITTLE)
304	TRIGLOPS MURRAYI	MAILED SCULPIN
305	TRIGLOPS NYBELINI	NYBELIN S SCULPIN
306	ARTEDIELLUS UNCINATUS	ARCTIC HOOKEAR SCULPIN
307	COTTUNCULUS MICROPS	POLAR SCULPIN
308	COTTUNCULUS THOMPSONI	PALLID SCULPIN
309	TRIGLOPS SP.	SCULPIN (NS)
310	MYOXOCEPHALUS SP.	SCULPIN
311	COTTIDAE F. UNID.	SCULPIN UNIDENTIFIED
312	COTTIDAE F.	SCULPINS
313	ICELUS BICORNIS	TWOHORN SCULPIN
314	ICELUS SPATULA	SPATULATE SCULPIN
315	MYOXOCEPHALUS QUADRICORNIS	FOURHORN SCULPIN
316	MYOXOCEPHALUS SCORPIOIDES	ARCTIC SCULPIN
317	TRIGLOPS PINGELI	RIBBED SCULPIN
318	ICELUS SP.	SCULPIN
319	LAEMONEMA BARBATULA	L. BARBATULA
320	HEMITRIPTERUS AMERICANUS	SEA RAVEN
321	THUNNUS SP.	THUNNUS SP.
322	CYCLOTHONE PSEUDOPALLIDA	C. PSEUDOPALLIDA
323	ARTEDIELLUS SP.	HOOKEAR SCULPIN (NS)
324	MONOLENE ANTILLARUM	M. ANTILLARUM
325	ENGYOPHRYS SENTA	ENGYOPHRYS SENTA
326	SPARIDAE F.	PORGIES (NS)
327	MYCTOPHUM ASPERUM	MYCTOPHUM ASPERUM
328	CHAETODONTIDAE F.	BUTTERFLYFISHES (NS)
329	TRIGLIDAE F.	SEAROBINS
330	PRIONOTUS CAROLINUS	NORTHERN,COMMON SEAROBIN
331	PERISTEDION MINIATUM	ARMORED SEA ROBIN
332	PRIONOTUS EVOLANS	STRIPED SEAROBIN
333	TRICHOPSETTA ORBISULCUS	T. ORBISULCUS
334	CHAULIODUS DANAE	CHAULIODUS DANAE
335	CHAULIODUS SP.	CHAULIODUS SP.
336	CLUPEIDAE F.	HERRING (NS)
337	OSMERIDAE F.	SMELTS,CAPELIN (NS)
338	ARISTOSTOMIAS SP.	ARISTOSTOMIAS SP.
339	SYNODONTIDAE F.	LIZARDFISHES
340	ASPIDOPHOROIDES MONOPTERYGIUS	ALLIGATORFISH
341	ASPIDOPHOROIDES OLRIKI	ARCTIC ALLIGATORFISH
342	HYGOPHUM REINHARDTII	H. REINHARDTII
343	LAMPADENA SP.	LAMPADENA SP.
344	ETROPUS CROSSOTUS	FRINGED FLOUNDER
345	CYCLOPSETTA FIMBRIATA	SPOTFIN FLOUNDER
346	PLEURONECTIFORMES O.	FLATFISH
347	BATHYLAGUS GREYAE	BATHYLAGUS GREYAE
348	VINCIGUERRIA SP.	VINCIGUERRIA SP.
349	ELOPS SAURUS	LADYFISH
350	AGONUS DECAGONUS	ATL SEA POACHER
351	AGONIDAE F.	ALLIGATOR FISH (NS)
352	PRIACANTHIDAE F.	BIGEYES (NS)
353	PRIACANTHUS ARENATUS	BIGEYE
354	BROSMICULUS IMBERBIS	B. IMBERBIS
355	REGALECUS GLESNE	REGALECUS GLESNE
356	RONDELETIA LORICATA	RONDELETIA LORICATA
357	MELANONUS ZUGMAYERI	M. ZUGMAYERI
358	TRACHYSCORPIA CRISTULATA	ATL THORNYHEAD
359	DIPLOSPINUS MULTISTRIATUS	D. MULTISTRIATUS
360	GASTEROSTEIDAE F.	STICKLEBACK UNIDENTIFIED
361	GASTEROSTEUS ACULEATUS	THREESPINE STICKLEBACK
362	PUNGITIUS PUNGITIUS	NINESPINE STICKLEBACK
363	APELTES QUADRACUS	FOURSPINE STICKLEBACK
364	GASTEROSTEUS WHEATLANDI	BLACKSPOTTED STICKLEBACK
365	BREGMACEROS ATLANTICUS	B. ATLANTICUS
366	ANTIGONIA COMBATIA	SHORTSPINE BOARFISH
367	DIODON HOLOCANTHUS	BALLONFISH
368	MELAMPHAES PUMILUS	MELAMPHAES PUMILUS
369	CHLOPSIS SP.	CHLOPSIS SP.
370	MYCTOPHUM SP.	MYCTOPHUM SP.
371	HEMIPTERONOTUS SP.	HEMIPTERONOTUS SP.
372	THALASSOMA BIFASCIATUM	T. BIFASCIATUM
373	MELANOCETUS SP.	MELANOCETUS SP.
374	HEMANTHIAS SP.	HEMANTHIAS SP.
375	ANTENNARIUS SP.	ANTENNARIUS SP.
376	POLYIPNUS SP.	POLYIPNUS SP.
377	DECAPTERUS SP.	DECAPTERUS SP.
378	GLOSSANODON SP.	GLOSSANODON SP.
379	CYCLOPSETTA SP.	CYCLOPSETTA SP.
380	HOLOCANTHUS SP.	HOLOCANTHUS SP.

381	SYMPHYSANODON SP.	SYMPHYSANODON SP.	435	PSEUDOPHICHTHUS SPLENDENS	P. SPLENDENS
382	MONOLENE SP.	MONOLENE SP.	436	RHECHIAS SP.	RHECHIAS SP.
383	EVERMANELLA BALBOA	E. BALBOA	437	UROCONGER SP.	UROCONGER SP.
384	ANTIGONIA CAPROS	DEEPBODY BOARFISH	438	UROCONGER SYRINGINUS	U. SYRINGINUS
385	MONOLENE SESSILICAUDA	DEEPWATER FLOUNDER	439	DIAPHUS SPLENDIDUS	D. SPLENDIDUS
386	ETROPUS MICROSTOMUS	SMALLMOUTH FLOUNDER	440	OPHICHTHIDAE F.	SNAKE EELS (NS)
387	CITHARICHTHYS CORNUTUS	HORNED WHIFF	441	AHLIA EGMONTIS	AHLIA EGMONTIS
388	CITHARICHTHYS GYMNORHINUS	C. GYMNORHINUS	442	APTERICHTUS ANSP	ACADEMY EEL
389	ICHTHYOCOCCUS OVATUS	I. OVATUS	443	APTERICHTUS KENDALLI	FINLESS EEL
390	MARGRETHIA OBTUSIROSTRA	M. OBTUSIROSTRA	444	BASCANICHTHYS BASCANIUM	B. BASCANIUM
391	FLAGELLOSTOMIAS BOUREEI	F. BOUREEI	445	CALLECHELYS SP.	CALLECHELYS SP.
392	CHIROSTOMIAS PLIOPTERUS	C. PLIOPTERUS	446	CALLECHELYS MURAENA	C. MURAENA
393	EUSTOMIAS BIGELOWI	EUSTOMIAS BIGELOWI	447	ECHIOPHIS SP.	ECHIOPHIS SP.
394	EUSTOMIAS LIPOCHIRUS	E. LIPOCHIRUS	448	MYROPHIS PLATYRHYNCHUS	M. PLATYRHYNCHUS
395	MACROSTOMIAS LONGIBARBATUS	M. LONGIBARBATUS	449	MYROPHIS PUNCTATUS	MYROPHIS PUNCTATUS
396	PHOTOSTOMIAS GUERNEI	P. GUERNEI	449	MYROPHIS PUNCTATUS	EEL,SPECKLED WORM
397	ANTENNARIUS OCELLATUS	OCELLATED FROGFISH	450	OPHICHTHUS SP.	OPHICHTHUS SP.
398	ANTENNARIIDAE F.	FROGFISHES (NS)	451	OPHICHTHUS GOMESI	SHRIMP EEL
399	HISTRIO HISTRIO	SARGASSUMFISH	452	OPHICHTHUS OCELLATUS	EEL,PALESPOTTED
400	LOPHIUS AMERICANUS	MONKFISH,GOOSEFISH,ANGLER	453	DIAPHUS BERTELSENI	DIAPHUS BERTELSENI
401	CERATIAS HOLBOELLI	DEEPSEA ANGLER	454	LOWEINA RARA	LOWEINA RARA
402	CRYPTOPSARAS COUESI	LESSER DEEPSEA ANGLER	455	SYNAPHOBRANCHIDAE F.	EELS, CUTTHROAT (NS)
403	HIMANTOLOPHUS GROENLANDICUS	ATL FOOTBALLFISH	456	SYNAPHOBRANCHINAE S.F.	SYNAPHOBRANCHINAE S.F.
404	HIMANTOLOPHUS SP.	HIMANTOLOPHUS SP.	457	SIMENCHELYINAE S.F.	EELS,SNUBNOSE (NS)
405	CAULOPHRYNE JORDANI	C. JORDANI	458	DYSOMMINAE S.F.	DYSOMMINAE S.F.
406	LINOPHRYNE ALGIBARBATA	L. ALGIBARBATA	459	DYSOMMA SP.	DYSOMMA SP.
407	LINOPHRYNE CORONATA	L. CORONATA	460	LAMPANYCTUS INTRICARIUS	L. INTRICARIUS
408	LINOPHRYNE LUCIFERA	L. LUCIFERA	461	LAMPADENA ATLANTICA	L. ATLANTICA
409	MALACOCEPHALUS OCCIDENTALIS	AMER STRAPTAIL GRENADIER	462	BOLINICHTHYS SUPRALATERALIS	B. SUPRALATERALIS
410	NEZUMIA BAIRDI	MARLIN-SPIKE GRENADIER	463	NEMICHTHYIDAE F.	EELS,SNIPE (NS)
411	MACROURUS BERGLAX	ROUGHHEAD GRENADIER	464	NEMICHTHYS SP.	NEMICHTHYS SP.
412	TRACHYRHYNCHUS MURRAYI	ROUGHNOSE GRENADIER	465	LAMPANYCTUS PHOTONOTUS	L. PHOTONOTUS
413	COELORHYNCHUS CARMINATUS	LONGNOSE GRENADIER	466	DIOGENICHTHYS ATLANTICUS	D. ATLANTICUS
414	CORYPHAENOIDES RUPESTRIS	ROCK GRENADIER(ROUNDNOSE)	467	HYGOPHUM TAANINGI	HYGOPHUM TAANINGI
415	CAULOPHRYNIDAE F.	CAULOPHRYNIDAE	468	CERATOSCOPELUS WARMINGII	C. WARMINGII
416	MACROURIDAE F.	GRENADIERS (NS)	469	LEPIDOPHANES GAUSSI	L. GAUSSI
417	HETEROPHOTUS SP.	HETEROPHOTUS SP.	470	MORINGUIDEA F.	MORINGUIDEA F.
418	GIGANTACTIS SP.	GIGANTACTIS	471	MORGINUA EDWARDSI	MORGINUA EDWARDSI
419	PHOTONECTES MARGARITA	P. MARGARITA	472	NEOCONGER MUCRONATUS	N. MUCRONATUS
420	GERREIDAE F.	MOJARRA (NS)	473	BENTHOSEMA SUBORBITALE	B. SUBORBITALE
421	MICROSTOMA MICROSTOMA	M. MICROSTOMA	474	MYCTOPHUM NITIDULUM	MYCTOPHUM NITIDULUM
422	ARGYROPELECUS AFFINIS	A. AFFINIS	475	NETTASTOMATIDAE F.	NETTASTOMATIDAE F.
423	DIAPHUS LUCIDUS	DIAPHUS LUCIDUS	476	NETTASTOMA SP.	NETTASTOMA SP.
424	DIAPHUS GARMANI	DIAPHUS GARMANI	477	HOPLUNNIS SP.	HOPLUNNIS SP.
425	MURAENIDAE F.	EELS,MORAY (NS)	478	NOTOSCOPELUS CAUDISPINOSUS	N. CAUDISPINOSUS
426	ANARCHIAS YOSHIAE	PYGMY MORAY	479	MACROPARALEPIS AFFINE	M. AFFINE
427	GYMNOTHORAX SP.	GYMNOTHORAX SP.	480	XENOCONGRIDAE F.	XENOCONGRIDAE F.
428	DIAPHUS BRACHYCEPHALUS	D. BRACHYCEPHALUS	481	CHLOPSIS BICOLOR	CHLOPSIS BICOLOR
429	CONGRIDAE F.	EELS,CONGER	482	KAUPICHTHYS HYOPROROIDES	K. HYOPROROIDES
430	ARIOSOMA SP.	ARIOSOMA SP.	483	LESTROLEPIS INTERMEDIA	L. INTERMEDIA
431	CONGER SP.	CONGER SP.	484	PARALEPIS ELONGATA	PARALEPIS ELONGATA
432	HILDEBRANDIA SP.	HILDEBRANDIA SP.	485	MURAENESOCIDAE F.	MURAENESOCIDAE F.
433	NYSTACTICHTHYS SP.	NYSTACTICHTHYS SP.	486	PARAXENOMYSTAX SP.	PARAXENOMYSTAX SP.
434	PARACONGER SP.	PARACONGER SP.	487	LESTIDIOPS SP.	LESTIDIOPS SP.

488	EVERMANELLA INDICA	E. INDICA
489	SCOPELOSAURUS ARGENTEUS	S. ARGENTEUS
490	HALOSAURIDAE F.	HALOSAURUS (NS)
491	TILUROPSIS SP.	TILUROPSIS SP.
492	SCOPELOSAURUS SMITHII	S. SMITHII
493	MELAMPHAES TYPHLOPS	M. TYPHLOPS
494	SCOPELOBERYX ROBUSTUS	S. ROBUSTUS
495	PTERYCOMBUS BRAMA	PTERYCOMBUS BRAMA
496	DRACONETTA ACANTHOPOMA	D. ACANTHOPOMA
497	PRISTIPOMOIDES AQUILONARIS	P. AQUILONARIS
498	ANTHIAS NICHOLSI	YELLOWFIN BASS
499	OPHICHTHUS PUNCTICEPS	O. PUNCTICEPS
500	LIPARIS SP.	SEASNAIL UNIDENTIFIED
501	CYCLOPTERUS LUMPUS	LUMPFISH
502	EUMICROTREMUS SPINOSUS	ATL SPINY LUMPSUCKER
503	LIPARIS ATLANTICUS	ATLANTIC SEASNAIL
504	LIPARIS LIPARIS	STRIPED SEASNAIL
505	LIPARIS FABRICII	SEASNAIL,GELATINOUS
506	LIPARIS TUNICATUS	GREENLAND SEASNAIL
507	CAREPROCTUS LONGIPINNIS	LONGFIN SEASNAIL
508	LIPARIS INQUILINUS	INQUILINE SEASNAIL
509	EUMICROTREMUS DERJUGINI	ATHERFIN LUMPSUCKER
510	OPSANUS TAU	TOAD FISH
511	PARALIPARIS COPEI	BLACKSNOUT SEASNAIL
512	LIPARIS GIBBUS	SEASNAIL,DUSKY
513	LIPARIS COHENI	GULF SEA SNAIL
514	CYCLOPTERIDAE INCLUDES LIPARIDAE	LUMPFISH,SEASNAIL(NS)
515	CAREPROCTUS SP.	SEASNAIL (NS)
516	SERRANUS SP.	SERRANUS SP.
517	AHLIESAURUS BERRYI	A. BERRYI
518	ARISTOSTOMIAS LUNIFER	A. LUNIFER
519	ARISTOSTOMIAS POLYDACTYLUS	A. POLYDACTYLUS
520	CAREPROCTUS REINHARDI	SEA TADPOLE
521	ASTRONESTHES CYANEUS	A. CYANEUS
522	ASTRONESTHES LEUCOPOGON	A. LEUCOPOGON
523	ASTRONESTHES NIGER	A. NIGER
524	ASTRONESTHES SIMILIS	A. SIMILIS
525	BATHOPHILUS PROXIMUS	B. PROXIMUS
526	BATHYLAGUS BERYCOIDES	B. BERYCOIDES
527	BENTHALBELLA INFANS	B. INFANS
528	BENTHODESMUS SP.	BENTHODESMUS SP.
529	BOLINICHTHYS INDICUS	B. INDICUS
530	CHAUNAX SP.	CHAUNAX SP.
531	CUBICEPS SP.	CUBICEPS SP.
532	CUBICEPS GRACILIS	CUBICEPS GRACILIS
533	COCCORELLA ATLANTICA	C. ATLANTICA
534	CUBICEPS CAPENSIS	CUBICEPS CAPENSIS
535	DIAPHUS FRAGILIS	DIAPHUS FRAGILIS
536	DIAPHUS HOLTI	DIAPHUS HOLTI
537	DIAPHUS ROEI	DIAPHUS ROEI
538	DIPLOPHUS TAENIA	DIPLOPHUS TAENIA
539	DOLICHOPTERYX BINOCULARIS	D. BINOCULARIS
540	DIAPHUS TAANINGI	DIAPHUS TAANINGI
541	ECHIOSTOMA BARBATUM	E. BARBATUM
542	EUSTOMIAS BIBULBOSUS	E. BIBULBOSUS
543	EUSTOMIAS DUBIUS	EUSTOMIAS DUBIUS
544	EUSTOMIAS FILIFER	EUSTOMIAS FILIFER
545	EUSTOMIAS OBSCURUS	E. OBSCURUS
546	EUSTOMIAS SCHMIDTI	E. SCHMIDTI
547	EUSTOMIAS TETRANEMA	E. TETRANEMA
548	GONOSTOMA SP.	ANGLEMOUTHS (NS)
549	LAMPADENA CHAVESI	L. CHAVESI
550	LAMPANYCTUS LINEATUS	L. LINEATUS
551	LAMPANYCTUS NOBILIS	L. NOBILIS
552	LEPIDOPHANES SP.	LEPIDOPHANES SP.
553	LESTIDIOPS AFFINIS	L. AFFINIS
554	LINOPHRYNE SP.	LINOPHRYNE SP.
555	LOPHOTUS LACEPEDEI	L. LACEPEDEI
556	MACRORHAMPHOSUS SCOLOPAX	LONGSPINE SNIPEFISH
557	MELAMPHAES SUBORBITALIS	M. SUBORBITALIS
558	MELAMPHAEIDAE	MELAMPHAEIDAE
559	MYCTOPHUM SELENOPS	MYCTOPHUM SELENOPS
560	OSTEICHTHYES C.	FISHES,BONY (NS)
561	HANSENIA OBLITA	HANSENIA OBLITA
562	NEMICHTHYS CURVIROSTRIS	N. CURVIROSTRIS
563	NEOEPINNULA ORIENTALIS	N. ORIENTALIS
564	OPISTHOPROCTUS SOLEATUS	O. SOLEATUS
565	PARALEPIS SP.	BARRACUDINA (NS)
566	PHOTONECTES SP.	PHOTONECTES SP.
567	NEOCONGER SP.	NEOCONGER SP.
568	POECILOPSETTA SP.	POECILOPSETTA SP.
569	POROMITRA SP.	POROMITRA SP.
570	SCOPELARCHUS MICHAELSARSI	S. MICHAELSARSI
571	SCOPELOGADUS SP.	SCOPELOGADUS SP.
572	SCOPELOSAURUS SP.	SCOPELOSAURUS (NS)
573	SQUALIOLUS LATICAUDUS	S. LATICAUDUS
574	STOMIAS BREVIBARBATUS	S. BREVIBARBATUS
575	STYLEPHORUS CHORDATUS	S. CHORDATUS
576	SYNAGROPS BELLA	BLACKMOUTH BASS
577	ZENION HOLOLEPIS	Z. HOLOLEPIS
578	CHAETODON SP.	CHAETODON SP.
579	ARIOSOMA BALEARICUM	BANDTOOTH CONGER
580	PERISTEDION SP.	PERISTEDION SP.
581	BATHYCLUPEA ARGENTEA	B. ARGENTEA
582	EPIGONUS OCCIDENTALIS	E. OCCIDENTALIS
583	ARISTOSTOMIAS PHOTODACTYLUS	A. PHOTODACTYLUS
584	ACANTHURUS SP.	ACANTHURUS SP.
585	CORYPHAENA EQUISELIS	C. EQUISELIS
586	PARABLENNIUS MARMOREUS	SEAWEED BLENNY
587	EPIGONUS PANDIONIS	E. PANDIONIS
588	SCOPELOSAURUS LEPIDUS	S. LEPIDUS
589	RAJA BIGELOW	RAJA BIGELOW
590	AMMODYTIDAE F.	SAND LANCES (NS)
591	BREVIRAJA SPINOSA	BREVIRAJA SPINOSA
592	SHARK (NS)	SHARK (NS)
593	CHLOROPHTHALAMIDAE	GREENEYES (NS)
594	ALEPOCEPHALUS AGASSIZII	SMOOTHHEAD,AGASSIZ'S
595	CYTTUS ROSEUS	RED DORY

596	BAJACALIFORNIA MEGALOPS	BIGEYE SMOOTH-HEAD
597	BLENNIIDAE SP.	BLENNIIDAE SP.
598	ZOARCIDAE F.	EELPOUTS (NS)
599	AMMODYTES AMERICANUS	AMER SAND LANCE
600	ANGUILLA ROSTRATA	AMERICAN EEL
601	SIMENCHELYS PARASITICUS	SNUBNOSE SLIME EEL
602	SYNAPHOBRANCHUS KAUPI	GRAY'S CUTTHROAT EEL
603	LYCENCHELYS VERRILLI	WOLF EELPOUT
604	NEMICHTHYS SCOLOPACEUS	SNIPE EEL
605	BLENNIOIDEI S.O.-OBSOLETE-	BLENNIES,SHANNIES,GUNNELS
606	GYMNOTHORAX FUNEBRIS	GREEN MORAY
607	NESSORHAMPHUS INGOLFIANUS	DUCKBILL OCEANIC EEL
608	CONGER OCEANICUS	CONGER EEL
609	OPHICHTHUS CRUENTIFER	SNAKE EEL
610	AMMODYTES DUBIUS	NORTHERN SAND LANCE
611	AMMODYTES SP.	SAND LANCE (NS)
612	DERICHTHYS SERPENTINUS	D. SERPENTINUS
613	SERRIVOMER BEANI	STOUT SAWPALATE
614	EURYPHARYNX PELECANOIDES	PELICAN GULPER
615	LIPOGENYS GILLII	BACKFIN TAPIRFISH
616	GYMNELIS VIRIDIS	FISH DOCTOR
617	LYCENCHELYS PAXILLUS	COMMON WOLF EEL
618	LYCENCHELYS SARSI	SARS WOLF EEL
619	LYCODES TERRAENOVA	EELPOUT,NEWFOUNDLAND
620	LYCODES LAVALAEI	LAVAL`S EELPOUT
621	PHOLIS GUNNELLUS	ROCK GUNNEL(EEL)
622	LUMPENUS LUMPRETAEFORMIS	SNAKE BLENNY
623	LUMPENUS MACULATUS	DAUBED SHANNY
623	LUMPENUS MACULATUS	DAUBED SHANNY
624	STICHAEUS PUNCTATUS	ARCTIC SHANNY
625	ULVARIA SUBBIFURCATA	RADIATED SHANNY
626	EUMESOGRAMMUS PRAECISUS	4-LINE SNAKE BLENNY
627	LYCODES PALLIDUS	PALE EELPOUT
628	LYCODES POLARIS	POLAR EELPOUT
629	CHIROLOPHUS ASCANII	YARRELL'S BLENNY
630	CRYPTACANTHODES MACULATUS	WRYMOUTH
631	LUMPENUS FABRICII	SLENDER EELBLENNY
632	LUMPENUS MEDIUS	STOUT EELBLENNY
633	PHOLIS FASCIATA	BANDED GUNNEL
634	ANGUILLOIDEI S.O.	UNIDENTIFIED EELS
635	CALLIONYMIDAE F.	DRAGONETS
636	PERCIFORMES O.	PERCHLIKE FISHES
636	PERCIFORMES O.	PERCHLIKE FISHES
637	CALLIONYMUS AGASSIZI	SPOTFIN DRAGONET
638	SERRIVOMER BREVIDENTATUS	S. BREVIDENTATUS
639	STICHAEIDAE F.	PRICKLEBACKS
640	MACROZOARCES AMERICANUS	OCEAN POUT(COMMON)
641	LYCODES RETICULATUS	ARCTIC EELPOUT
642	LYCODES SP.	EELPOUTS(NS)
643	LYCODES ESMARKI	VACHON'S EELPOUT
644	BLENNIOIDEI S.O.	BLENNIES,SHANNIES,GUNNELS
645	LUMPENIDAE F.	SHANNY-UNIDENTIFIED
646	MELANOSTIGMA ATLANTICUM	ATL SOFT POUT
647	LYCODES VAHLII	SHORTTAILED EELPOUT(VAHL)
648	ANGUILLIDAE F.	EEL-UNIDENTIFIED
649	OPHIDIIDAE INCLUDES BROTULIDAE F.	CUSK-EELS
650	LEPOPHIDIUM CERVINUM	FAWN CUSK EEL
651	ANGUILLA ANGUILLA	EUROPEAN EEL
652	PERCOIDEA S.O.	PERCOIDEI F.
653	CALLIONYMUS BAIRDI	CORAL DRAGONET
654	OPHIDION SELENOPS	MOONEYE CUSK-EEL
655	BYTHITIDAE F.	BYTHITIDAE F.
656	SERRIVOMER SP.	SERRIVOMER SP.
657	CALLIONYMUS SP.	CALLIONYMUS SP.
658	CALLIONYMUS PAUCIRADIATUS	C. PAUCIRADIATUS
659	FACCIOLELLA SP.	FACCIOLELLA SP.
660	OPHIDIOIDEI S.O.	CUSK EELS (NS)
661	HEMANTHIAS VIVANUS	RED BARBIER
662	NOTACANTHIDAE F.	SPINY EELS (NS)
662	NOTACANTHIDAE F.	SPINY EELS (NS)
663	DIPLECTRUM SP.	DIPLECTRUM SP.
664	MYCTEROPERCA SP.	SEA BASSES
665	MELANOSTOMIATIDAE (STOMIATIDAE)	DRAGONFISHES,SMOOTH
666	LESTIDIUM ATLANTICUM	L. ATLANTICUM
667	VINCIGUERRIA POWERIAE	V. POWERIAE
668	ANTHIAS SP.	ANTHIAS SP.
669	ATHERINIDAE F.	ATHERINIDAE F.
670	EUSTOMIAS FISSIBARBIS	E. FISSIBARBIS
671	VINCIGUERRIA ATTENUATA	V. ATTENUATA
672	PONTINUS SP.	PONTINUS
673	SYNAGROPS SPINOSA	SYNAGROPS SPINOSA
674	PARALEPIS COREGONOIDES	P. COREGONOIDES
675	SYNGNATHUS DUNCKERI	PUGNOSE PIPEFISH
676	SYNGNATHUS SPRINGERI	BULL PIPEFISH
677	EPIGONUS DENTICULATUS	E. DENTICULATUS
678	HEMIRAMPHUS BRASILIENSIS	BALLYHOO
679	VALENCIENNELLUS TRIPUNCTULATUS	V. TRIPUNCTULATUS
680	STOMIATIFORMES (ORDER)	STOMIATIFORMES
681	SCOPELARCHUS ANALIS	S. ANALIS
682	HIRUNDICHTHYS AFFINIS	FOURWING FLYING FISH
683	ONEIRODIDAE F.	F.ONEIRODIDAE
684	VINCIGUERRIA NIMBARIA	V. NIMBARIA
685	APOGON PSEUDOMACULATUS	TWOSPOT CARDINALFISH
686	MELAMPHAES SP.	MELAMPHAES SP.
687	CERATIOIDEI S.O.	CERATIOIDEI S.O.
688	LESTIDIOPS JAYAKARI	L. JAYAKARI
689	TRICHIURIDAE F.	CUTLASSFISHES (NS)
689	TRICHIURIDAE F.	CUTLASSFISHES (NS)
690	BREGMACEROS SP.	BREGMACEROS SP.
691	SUDIS HYALINA	SUDIS HYALINA
692	DIODONTIDAE F.	PORCUPINEFISHES (NS)
693	SYMPHURUS MINOR	LARGESCALE TONGUEFISH
694	OGCOCEPHALIDAE F.	BATFISHES
695	DIPLECTRUM FORMOSUM	SAND PERCH
696	CYCLOTHONE ACCLINIDENS	C. ACCLINIDENS
697	APOGONIDAE F.	CARDINAL FISHES
697	APOGONIDAE F.	CARDINAL FISHES
698	EPINEPHELUS NIVEATUS	SNOWY GROUPER

699	POLYPRION AMERICANUS	ATL WRECKFISH
700	ARGYROPELECUS ACULEATUS	ATL SILVER HATCHFISH
701	PEPRILUS TRIACANTHUS	BUTTERFISH
702	SYNGNATHUS FUSCUS	NORTHERN PIPEFISH
703	SYNGNATHUS PELAGICUS	PELAGIC PIPEFISH
704	ZENOPSIS OCELLATA	AMER. JOHN DORY
705	ARGYROPELECUS GIGAS	A. GIGAS
706	ARGYROPELECUS HEMIGYMNUS	A. HEMIGYMNUS
707	ARGYROPELECUS LYCHNUS LYCHNUS	A. LYCHNUS LYCHNUS
708	POLYIPNUS ASTEROIDES	P. ASTEROIDES
709	STERNOPTYX DIAPHANA	TRANSPARENT HATCHETFISH
710	ALEPISAURUS FEROX	LONGNOSE LANCETFISH
711	PARALEPIS ATLANTICA	SHORT BARRACUDINA
712	NOTOLEPIS RISSOI KROYERI	WHITE BARRACUDINA
713	PARALEPIDIDAE F.	BARRACUDINA,UNID
714	BENTHODESMUS ELONGATUS SIMONYI	FROSTFISH
715	SERRANIDAE F.	SEA BASSES
716	BOROSTOMIAS ANTARCTICUS	STRAIGHTLINE DRAGONFISH
717	GRAMMATOSTOMIAS DENTATUS	TORPEDO DRAGONFISH
718	MELANOSTOMIAS SPILORHYNCHUS	BLUENOSE DRAGONFISH
719	ODONTOSTOMIAS SP.	ODONTOSTOMIAS SP.
720	SCOMBERESOX SAURUS	ATL SAURY,NEEDLEFISH
721	TRIGONOLAMPA MIRICEPS	3LIGHT DRAGONFISH
722	BATHOPHILUS METALLICUS	B. METALLICUS
723	IDIACANTHUS FASCIOLA	RIBBON SAWTAILFISH
724	ALEPOCEPHALUS BAIRDII	BAIRDS SMOOTHEAD
725	XENODERMICHTHYS COPEI	ATLANTIC GYMNAST
726	MENTODUS ROSTRATUS	MENTODUS ROSTRATUS
727	NOTOLEPIS RISSOI	WHITE BARRACUDINA
728	PARALEPIS ATLANTICA ATLANTICA	SHORT BARRACUDINA
729	ONOSUDIS LOWEI	ONOSUDIS LOWEI
730	MOLA MOLA	OCEAN SUNFISH
731	ALEPISAURUS BREVIROSTRIS	SHORTNOSE LANCETFISH
732	ANOTOPTERUS PHARAO	DAGGERTOOTH
733	EVERMANNELLA SP.	EVERMANNELLA SP.
734	CYPSELURUS FURCATUS	SPOTFIN FLYINGFISH
735	CYPSELURUS HETERURUS	ATL FLYINGFISH
736	HIRUNDICHTHYS RONDELETTI	BLACKWING FLYINGFISH
737	HYPORHAMPHUS SP.	COMMON HALFBEAK
738	FUNDULUS DIAPHANUS	BANDED KILLIFISH
739	POLYACANTHONOTUS RISSOANUS	SHORTSPINE TAPIRFISH
740	NOTACANTHUS CHEMNITZI	SPINY EEL
741	STERNOPTYCHIDAE F.	HATCHETFISH
742	DIBRANCHUS ATLANTICUS	ATLANTIC BATFISH
743	HYPEROGLYPHE PERCIFORMIS	AMER BARRELFISH
744	POLYMIXIA NOBILIS	STOUT BEARD FISH
745	GONOSTOMATIDAE F. (NS)	ANGLEMOUTH
746	SPHOEROIDES MACULATUS	NORTHERN PUFFER
747	CORYPHAENA HIPPURUS	DOLPHIN(COMMON)
748	EXOCOETIDAE F.	FLYING FISH(UNIDENTIFIED)
749	CONOCARA SALMONEA	SLICKHEAD
750	HOWELLA BRODIEI	CARDINALFISH
751	PONTINUS RATHBUNI	HIGHFIN SCORPIONFISH
752	POLLICHTHYS MAULI	MAULS ANGLEMOUTH
753	CYCLOTHONE ALBA	ALBINO ANGLEMOUTH
754	CYCLOTHONE BRAUERI	BRAUERS ANGLEMOUTH
755	CYCLOTHONE SP.	ANGLEMOUTH (NS)
756	STOMIAS SP.	DRAGONFISH UNID
757	PHYSICULUS FULVUS	LITTLE MORID
758	LOBIANCHIA DOFLEINI	DOFLEINS LANTERNFISH
759	SYNGNATHUS SP.	PIPEFISH UNIDEN.
760	MELANOCETUS JOHNSONI	M. E. JOHNSONI
761	CHAENOPHRYNE LONGICEPS	C. LONGICEPS
762	DOLOPICHTHYS ALLECTOR	D. ALLECTOR
763	LASIOGNATHUS BEEBEI	L. BEEBEI
764	LEPTACANTHICHTHYS GRACILISPINIS	L. GRACILI
765	LOPHODOLUS ACANTHOGNATHUS	L. ACANTHOGNATUS
766	MICROLOPHICHTHYS MICROLOPHUS	M. MICROLOP
767	ONEIRODES ESCHRICHTII	O. ESCHRICHTII
768	ONEIRODES SP.	ONEIRODES SP.
769	FUNDULUS HETEROCLITUS	MUMMICHOG
770	MENIDIA MENIDIA	ATLANTIC SILVERSIDE
771	POLYMIXIA LOWEI	BEARDFISH
772	DIRETMUS ARGENTEUS	SPINYFIN
773	GEPHYROBERYX DARWINI	G. DARWINI
774	ANOPLOGASTER CORNUTA	OGREFISH
775	BERYX DECADACTYLUS	ALFONSIN A CASTA LARGA
776	BERYX SPLENDENS	ALFONSIN A CASTA
777	XENOLEPIDICHTHYS AMERICANUS	GRAMMICOLEPID
778	LAMPRIS GUTTATUS	OPAH
779	HIPPOCAMPUS ERECTUS	LINED SEAHORSE
780	FISTULARIA TABACARIA	BLUESPOTTED CORNETFISH
781	APOGON MACULATUS	FLAMEFISH
782	APOGON SELLICAUDE	APOGON SELLICAUDE
783	HOWELLA SHERBORNI	SHERBORNS CARDINALFISH
784	APHANOPUS CARBO	BLACK SCABBARDFISH
785	ARIOMMA BONDI	SILVER-RAG
786	SCHEDOPHILUS MEDUSOPHAGUS	CORNISH BLACKFISH
787	CENTROLOPHUS NIGER	BLACK RUFF
788	NOMEUS GRONOVII	MAN-OF-WAR FISH
789	PSENES MACULATUS	SILVER DRIFTFISH
790	TETRAGONURUS ATLANTICUS	BIGEYE SQUARETAIL
791	TETRAGONURUS CUVIERI	SMALLEYE SQUARETAIL
792	LAGOCEPHALUS LAGOCEPHALUS	OCEANIC PUFFER
793	CHILOMYCTERUS SCHOEPFI	STRIPED BURRFISH
794	LACTOPHRYS TRIGONUS	TRUNKFISH
795	SCOPELOGADUS BEANII	BEANS BLUEBACK
796	SCOPELOBERYX OPISTHOPTERUS	S. OPISTHOPTERU
797	POROMITRA MEGALOPS	P. MEGALOPS
798	MELAMPHAES MICROPS	MELAMPHAES MICROPS
799	POROMITRA CAPITO	P. CAPITO
800	POROMITRA CRASSICEPS	P. CRASSICEPS
801	TRACHINOCEPHALUS MYOPS	SNAKEFISH
802	BERYCIFORMES O.	BERYCOID FISH
803	RACHYCENTRON CANADUM	COBIA
804	GOBIIDAE F.	GOBIES,UNIDENTIFIED
805	SYMPHURUS SP.	TONGUEFISH
806	DACTYLOPTERUS VOLITANS	FLYING GURNARD

807	SAURIDA NORMANI	SHORTJAW LIZARDFISH	870	MONOMITOPUS AGASSIZI	M. AGASSIZI
808	SYNODUS SYNODUS	RED LIZARDFISH	871	SCOPELOGADUS MIZOLEPIS	S. MIZOLEPIS
809	LACTOPHRYS TRIQUETER	SMOOTH TRUNKFISH	872	MELANOSTOMIAS MELANOPOGON	M. MELANOPOGON
810	AMPHELIKTURUS DENDRITICUS	PIPEHORSE	873	RYPTICUS SP.	RYPTICUS SP.
811	MYCTOPHIFORMES O.	MYCTOPHIFORMES	874	LEPTOSTOMIAS GLADIATOR	L. GLADIATOR
812	SYNODUS SP.	SYNODUS SP.	875	ASTRONESTHES GEMMIFER	A. GEMMIFER
813	ARIOMMA SP.	ARIOMMA SP.	876	STEMONOSUDIS INTERMEDIA	S. INTERMEDIA
814	BATHYSAURUS FEROX	BATHYSAURUS FEROX	877	NESIARCHUS NASUTUS	LONGNOSE ESCOLAR
815	EUTAENIOPHORUS SP.	EUTAENIOPHORUS SP.	878	EPIGONUS SP.	EPIGONUS SP.
816	SYMPHURUS PTEROSPILOTUS	TONGUE FISH	879	EPINEPHELUS MORIO	GROUPER,RED
817	LEPTOSTOMIAS SP.	LEPTOSTOMIAS SP.	880	ARTEDIELLUS ATLANTICUS	HOOKEAR SCULPIN,ATL.
818	ARISTOSTOMIAS TITTMANNI	A. TITTMANNI	890	AMIA CALVA	AMIA CALVA
819	MALACOSTEIDAE F.	LOOSEJAWS (NS)	900	PHOCIDAE F.	SEALS (NS)
820	CUBICEPS PAUCIRADIATUS	C. PAUCIRADIATUS	910	ODOBENIDAE F.	ODOBENIDAE F.
821	NOMEIDAE F.	DRIFTFISHES	920	ODONTOCEIT S.O.(WHALES)	WHALES (NS)
822	PSENES PELLUCIDUS	PSENES PELLUCIDUS	921	GLOBICEPHALA MELAENA	ATL PILOT WHALE
823	SARGOCENTRON BULLISI	SARGOCENTRON BULLISI	922	HYPEROODON AMPULLATUS	NORTH-BOTTLENOSE WHALE
824	BENTHODESMUS TENUIS	B. TENUIS	930	ODONTOCEIT S.O.(DOLPHINS)	DOLPHINS (NS)
825	STOMIAS AFFINIS	STOMIAS AFFINIS	931	TURSIOPS TRUNCATUS	ATL BOTTLENOSED DOLPHIN
826	CANTHIDERMIS SUFFLAMEN	OCEAN TRIGGERFISH	932	LAGENORHYNCHUS ALBIROSTRIS	WHITE BEAKED DOLPHIN
827	SPHOEROIDES SP.	PUFFER	933	LAGENORHYNCHUS ACUTUS	ATL WHITE-SIDED DOLPHIN
828	HOLANTHIAS MARTINICENSIS	ROUGHTONGUE BASS	940	BROTULA BARBATA	BEARDED BROTULA
829	PARACONGER CAUDILIMBATUS	MARGINTAIL CONGER	950	OTOPHIDIUM OMOSTIGMUM	POLKA-DOT CUSK-EEL
830	ACANTHOCYBIUM SOLANDERI	WAHOO	960	CARANX SP.	CARANX SP.
831	BREGMACEROS MACCLELLANDI	B. MACCLELLANDI	965	CARCHARHINUS LIMBATUS	BALCKTIP SHARK
832	SAURIDA CARRIBBEA	SAURIDA CARRIBBEA	1100	EGGS UNID.	EGGS UNID.
833	SAURIDA BRASILIENSIS	LIZARDFISH,LARGESCALE	1200	FISH EGGS-UNIDENTIFIED	FISH EGGS-UNIDENTIFIED
834	ETRUMEUS SADINA	ETRUMEUS SADINA	1210	GADIDAE F. EGGS	COD FAMILY
835	MAKAIRA INDICA	BLACK MARLIN	1211	GADUS MORHUA EGGS	COD EGGS
836	ANCHOA LAMPROTAENIA	A. LAMPROTAENIA	1212	MELANOGRAMMUS AEGLEFINUS EGGS	HADDOCK EGGS
837	ALBULA SP.	ALBULA SP.	1215	MAUROLICUS MUELLERI EGGS	MULLER'S PEARLSIDES EGGS
838	GORDIICHTHYS LEIBYI	G. LEIBYI	1219	LIOPSETTA PUTNAMI EGGS	SMOOTH FLOUNDER EGGS
839	LETHARCHUS ALICULATUS	L. ALICULATUS	1220	PARALICHTHYS OBLONGUS EGGS	FOURSPOT FLOUNDER EGGS
840	TETRAPTURUS PFLUEGERI	LONGBILL SPEARFISH	1221	CLUPEA HARENGUS EGGS	HERRING EGGS
841	LAMPETRA JAPONICA	LAMPETRA JAPONICA	1222	HIPPOGLOSSOIDES PLATESSOIDES EGGS	PLAICE EGGS
842	LAMPETRA LAMOTTEI	LAMPETRA LAMOTTEI	1223	SCOMBER SCOMBRUS EGGS	MACKEREL EGGS
843	JENKINSIA LAMPROTAENIA	DWARF HERRING	1224	RAJA EGGS	SKATE UNID. EGGS
844	HALIEUTICHTHYS ACULEATUS	BATFISH,SPINY	1225	CYCLOPTERUS LUMPUS EGGS	LUMPFISH EGGS
850	SCOPELOSAURUS MAULI	S. MAULI	1226	AMMODYTES EGGS	SAND LANCE EGGS
851	CARASSIUS AURATUS	CARASSIUS AURATUS	1227	GLYPTOCEPHALUS CYNOGLOSSUS EGGS	WITCH EGGS
852	CHROSOMUS EOS	CHROSOMUS EOS	1228	MYOXOCEPHALUS EGGS	SCULPIN EGGS UNID.
853	CHROSOMUS NEOGAEUS	CHROSOMUS NEOGAEUS	1229	ENCHELYOPUS CIMBRIUS EGGS	F.B. ROCKLING EGGS
854	COUESIUS PLUMBEUS	CHUB,LAKE	1230	LIMANDA FERRUGINEA EGGS	YELLOWTAIL EGGS
855	MICRODESMIDAE F.	MICRODESMIDAE F.	1231	PLEURONECTIFORME EGGS	UNID. FLATFISH EGGS
856	NOTEMIGONUS CRYSOLEUCAS	N. CRYSOLEUCAS	1232	TAUTOGOLABRUS ADSPERSUS EGGS	CUNNER EGGS
860	BOLINICHTHYS SP.	BOLINICHTHYS SP.	1233	UROPHYCIS TENUIS EGGS	WHITE HAKE EGGS
861	HYGOPHUM SP.	HYGOPHUM SP.	1234	PEPRILUS TRIACANTHUS EGGS	BUTTERFISH EGGS
862	DICROLENE INTRONIGRA	D. INTRONIGRA	1235	BROSME BROSME EGGS	CUSK EGGS
863	BATHYPTEROIS QUADRIFILIS	B. QUADRIFILIS	1236	H4B EGGS	HAKE/4BROCK/BUTTERFISH/WINDOWPANE
865	ALDROVANDIA PHALACRA	A. PHALACRA	1237	COD/HADDOCK EGGS	COD/HADDOCK EGGS
866	XENOLEPIDICHTHYS DALGLEISHI	X. DALGLEISHI	1238	LOPHIUS AMERICANUS EGGS	ANGLER/MONKFISH EGGS
867	GIGANTACTIS VANHOEFFENI	G. VANHOEFFENI	1239	MERLUCCIUS BILINEARIS EGGS	SILVER HAKE EGGS
868	PARALIPARIS CALIDUS	SEASNAIL	1240	SILVER/L.F.HAKE EGGS	SILVER/L.F.HAKE EGGS
869	PARALIPARIS GARMANI	SEASNAIL	1241	S/L.F.HAKE/4B ROCK. EGGS	S/L.F.HAKE/4B ROCK. EGGS

1242	COD/HADDOCK/WITCH EGGS	COD/HADDOCK/WITCH EGGS
1243	CUSK/MACKEREL EGGS	CUSK/MACKEREL EGGS
1244	CUNNER/YELLOWTAIL EGGS	CUNNER/YELLOWTAIL EGGS
1245	MERLUCCIUS ALBIDUS EGGS	OFFSHORE HAKE EGGS
1246	UROPHYCIS SP. EGGS	HAKE EGGS
1247	POLLACHIUS VIRENS EGGS	POLLOCK EGGS
1248	HIPPOGLOSSUS HIPPOGLOSSUS EGGS	ATL HALIBUT EGGS
1249	SCOPHTHALMUS AQUOSUS EGGS	BRILL-WINDOWPANE EGGS
1250	CITHARICHTHYS ARCTIFRONS EGGS	GULF STREAM FLD EGGS
1251	PARALICHTHYS DENTATUS EGGS	SUMMER FLOUNDER EGGS
1252	ARGENTINA SILUS EGGS	ARGENTINA SILUS EGGS
1253	PSEUDOPLEURONECTES AMERICANUS EGGS	WINTER FLOUNDER EGGS
1260	GONOSTOMATIDAE EGGS	GONOSTOMATIDAE EGGS
1295	LIPARIS SP. EGG	UNIDENTIFIED SEASNAIL EGG
1300	CRUSTACEA EGGS	CRUSTACEAN EGGS
1305	INVERTEBRATE EGGS OTHER	INVERTEBRATE EGGS OTHER
1309	COPEPODA, EGGS	COPEPODA, EGGS
1310	DECAPODA EGGS	DECAPOD EGGS
1311	PANDALID EGGS	PANDALID EGGS
1312	HYPPOLYTID EGGS	HIPPOLYTID EGGS
1313	CRAGONID EGGS	CRAGONID EGGS
1314	CRAB EGGS	CRAB EGGS
1315	LOBSTER EGGS	LOBSTER EGGS
1316	HERMIT CRAB EGGS	HERMIT EGGS
1400	ANNELID EGGS	ANNELID EGGS UNID.
1410	POLYCHAETA EGGS	POLYCHAETE EGGS UNID.
1420	APHRODITA ACULEATA EGGS	SEA MOUSE EGGS UNID.
1430	SIPUNCULA (GEPHYREA) EGGS	GEPHYREANS EGGS UNID.
1440	NEMATODA EGGS	TUBE WORMS EGGS UNID.
1500	MOLLUSCA EGGS	MOLLUSC EGGS UNID.
1510	BUCCINIDAE EGGS	WHELK EGGS (NS)
1511	GASTEROPODA EGGS	SNAIL/SLUG EGGS
1520	PELECYPODA EGGS	BIVALVE MOLLUS EGGS
1530	CEPHALOPODA UNID. EGGS	SQUID EGGS
1600	INVERTEBRATE EGGS	INVERTEBRATE EGGS
1700	FORAMINIFERA O.	FORAMINIFERA
1701	MARINE INVERTEBRATA (NS)	MARINE INVERTEBRATES (NS)
1725	ALLOGROMIA SP.	ALLOGROMIA SP.
1750	RADIOLARIDA O.	RADIOLARIDA O.
1800	PROTOCHORDATA SP.	PROTOCHORDATA SP.
1810	TUNICATA S.P.	TUNICATA S.P.
1815	MOLGULIDAE F.	MOLGULIDAE F.
1820	ASCIDIA SP. ADULT	ADULT ASCIDIANS
1821	ASCIDIA SP.	SEA SQUIRTS
1822	DENDRODOA SP.	DENDRODOA SP.
1823	BOLTENIA SP.	SEA POTATO
1824	PELONAIA SP.	PELONAIA SP.
1825	ASCIDIA SP. LARVAL	LARVAL ASCIDIANS
1826	MOLGULA MANHATTENSIS	SEA GRAPES
1827	HALOCYNTHIA PYRIFORMIS	SEA PEACH
1828	AMPHIOXUS SP.	SAND BLISTERS
1830	LARVACEA C.	LARVACEA C.
1831	OIKOPLEURA SP.	OIKOPLEURA SP.
1840	SALPIDAE F.	SALPIDAE F.

1845	THALIACEA C.	THALIACEA C.
1900	BRYOZOANS P.	BRYOZOANS P.
1910	ENTOPROCTA P.	ENTOPROCTA P.
1920	BRYOZOANS ECTOPROCTA P.	BRYOZOANS ECTOPROCTA
1930	BRYOZOANS BRACHIOPODA P.	LAMPSHELLS
1931	RHYNCHONELLA SP.	RHYNCHONELLA SP.
1932	TEREBRATULINA SP.	TEREBRATULINA SP.
2000	CRUSTACEA C.	CRUSTACEA C.
2001	CRUSTACEA LARVAE	CRUSTACEA LARVAE
2010	DECAPODA LARVAE	DECAPODA LARVAE
2100	DECAPODA O.	SHRIMPS
2200	PANDALIDAE F.	PANDALIDAE F.
2210	PANDALUS SP.	PANDALUS SP.
2211	PANDALUS BOREALIS	PANDALUS BOREALIS
2212	PANDALUS MONTAGUI	PANDALUS MONTAGUI
2213	PANDALUS PROPINQUUS	PANDALUS PROPINQUUS
2214	DICHELOPANDALUS LEPTOCERUS	D. LEPTOCERUS
2215	DICHELOPANDALUS SP.	DICHELOPANDALUS SP.
2219	PASIPHAEIDAE F.	PASIPHAEIDAE F.
2220	PASIPHAEA TARDA	SHRIMP
2221	PASIPHAEA MULTIDENTATA	P. MULTIDENTATA
2240	PALAEMONIDAE F.	PALAEMONIDAE F.
2245	PALAEMONETES VULGARIS	SHORE SHRIMP,COMMON PRAWN
2300	HIPPOLYTIDAE F.	HIPPOLYTIDAE F.
2309	HIPPOLYTE ZOSTERICOLA	EEL GRASS SHRIMP
2310	SPIRONTOCARIS SP.	SPIRONTOCARIS
2311	SPIRONTOCARIS FABRICII (OBSOLETE)	S. FABRICI
2312	LEBBEUS POLARIS	LEBBEUS POLARIS
2313	SPIRONTOCARIS LILJEBORGII	S. LILJEBORGII
2314	SPIRONTOCARIS MACILENTA (OBSOLETE)	S. MACILENTA
2315	SPIRONTOCARIS PHIPPSII	S. PHIPPSII
2316	SPIRONTOCARIS SPINUS	S. SPINUS
2317	EUALUS PUSIOLUS	EUALUS PUSIOLUS
2318	CARIDION GORDONI	CARIDION GORDONI
2319	LEBBEUS GROENLANDICUS	L. GROENLANDICUS
2320	LEBBEUS SP.	LEBBEUS SP.
2321	LEBBEUS ZEBRA	LEBBEUS ZEBRA
2330	EUALUS SP.	EUALUS SP.
2331	EUALUS MACILENTUS	EUALUS MACILENTUS
2332	EUALUS FABRICII	EUALUS FABRICII
2333	EUALUS GAIMARDII	EUALUS GAIMARDII
2350	CLADOCERA O.	CLADOCERA O.
2351	PODON SP.	PODON SP.
2352	EVADNE SP.	EVADNE SP.
2400	CRANGONIDAE F.	CRANGONIDAE F.
2401	SNAPPING SHRIMP (OBSOLETE)	SNAPPING SHRIMP
2410	ARGIS SP.	ARGIS SP.
2411	ARGIS DENTATA	ARGIS DENTATA
2412	PONTOPHILUS BREVIROSTRIS	P. BREVIROSTRIS
2413	SCLEROCRANGON SP.	SCLEROCRANGON SP.
2414	SCLEROCRANGON BOREAS	S. BOREAS
2415	PONTOPHILUS NORVEGICUS	P. NORVEGICUS
2416	CRANGON SP.	CRANGON SP.
2417	CRANGON SEPTEMSPINOSA	C. SEPTEMSPINOSA

2420	SABINEA SP.	SABINEA SP.
2421	SABINEA SEPTEMCARINATA	S. SEPTEMCARINATA
2450	PENAEIDAE F.	PENAEIDAE F.
2508	CALAPPIDAE F.	CALAPPIDAE F.
2509	CANCRIDAE F.	CANCER CRAB (NS)
2510	BRACHYURA S.	BRACHIURAN CRABS
2511	CANCER BOREALIS	JONAH CRAB
2512	CALLINECTES SAPIDUS	BLUE CRAB
2513	CANCER IRRORATUS	ATL ROCK CRAB
2514	LIMULUS POLYPHEMUS	HORSESHOE CRAB (AMERICAN)
2515	PORTUNIDAE F.	PORTUNIDAE F.
2519	MAJIDAE F.	SPIDER CRAB (NS)
2520	HYAS SP.	TOAD CRAB,UNIDENT.
2521	HYAS COARCTATUS	HYAS COARCTATUS
2522	CHIONOECETES SP. - OBSOLETE	SPIDER/(QUEEN,SNOW)UNID
2523	LITHODES MAJA	NORTHERN SNOW CRAB
2524	CANCER SP.	CANCER SP.
2525	LITHODES/NEOLITHODES	SPINY CRAB
2526	CHIONOECETES OPILIO	SNOW CRAB (QUEEN)
2527	HYAS ARANEUS	TOAD CRAB
2528	NEOLITHODES GRIMALDI	SPINY SPIDER CRAB
2529	CALAPPA MEGALOPS	CALAPPA MEGALOPS
2531	CARCINUS MAENAS	GREEN CRAB
2532	GERYON QUINQUEDENS	DEEP SEA RED CRAB
2533	LYREIDUS BAIRDII	LYREIDUS BAIRDII
2535	SPIRORBIS SP.	SPIRORBIS SP.
2536	ERICHTHONIUS RUBRICORNIS	E. RUBRICORNIS
2537	UNCIOLA IRRORATA	UNCIOLA IRRORATA
2540	AXIIDAE F.	AXIIDAE F.
2541	AXIUS SERRATUS	AXIUS SERRATUS
2550	HOMARUS AMERICANUS	AMERICAN LOBSTER
2551	HOMARUS AMERICANUS LARVAE	LOBSTER LARVAE
2554	GALATHEIDAE F.	GALATHEIDAE F.
2555	MUNIDA IRIS	MUNIDA IRIS
2556	MUNIDA VALIDA	MUNIDA VALIDA
2558	PAGURUS POLITUS	PAGURUS POLITUS
2559	PAGURIDAE F.	HERMIT CRABS
2560	PAGUROIDEA S.F.	PAGUROIDEA S.F.
2561	PAGURUS SP.	PAGURUS SP.
2562	PAGURUS ACADIANUS	PAGURUS ACADIANUS
2563	PAGURUS KROYERI (OBSOLETE)	PAGURUS KROYERI
2564	PAGURUS PUBESCENS	PAGURUS PUBESCENS
2565	THALASSINIDAE S.F.	MUD SHRIMP
2566	MUNIDOPSIS CURVIROSTRA	M. CURVIROSTRA
2567	CALOCARIS MACANDREAE	C. MACANDREAE
2568	PAGURUS ARCUATUS	PAGURUS ARCUATUS
2600	EUPHAUSIACEA O.	KRILL SHRIMP
2605	LIMACINA SP.	LIMACINA SP.
2606	THECOSOMATA O.	THECOSOMATA O.
2610	EUPHAUSIIDAE F.	EUPHAUSIIDAE F.
2611	MEGANYCTIPHANES NORVEGICA	M. NORVEGICA
2612	EUPHAUSIA SP.	EUPHAUSIA SP.
2613	EUPHAUSIA KROHNI	EUPHAUSIA KROHNI
2620	THYSANOESSA SP.	THYSANOESSA SP.
2621	THYSANOESSA RASCHII	T. RASCHII
2622	THYSANOESSA INERMIS	T. INERMIS
2623	THYSANOESSA LONGICAUDATA	T. LONGICAUDATA
2624	THYSANOESSA ACUTIFRONS	T. ACUTIFRONS
2650	OSTRACODA S.C.	OSTRACODA S.C.
2699	EUPHAUSIACEA/MYSIDACEA O.	EUPAUSIIDS (NS)
2700	MYSIDACEA O.	MYSID SHRIMP
2710	MYSIS SP.	MYSIS SP.
2711	MYSIS STENOLEPIS	MYSIS STENOLEPIS
2712	MYSIS MIXTA	MYSIS MIXTA
2713	MYSIS GASPENSIS	MYSIS GASPENSIS
2721	PSEUDOMMA AFFINE	PSEUDOMMA AFFINE
2722	PSEUDOMMA TRUNCATUM	P. TRUNCATUM
2731	ERYTHROPS ERYTHROPTHALMA	E. ERYTHROPTHALMA
2732	METERYTHROPS ROBUSTUS	M. ROBUSTUS
2733	STILOMYSIS GRANDIS	S. GRANDIS
2734	NEOMYSIS AMERICANA	NEOMYSIS AMERICANA
2735	BOREOMYSIS TRIDENS	B. TRIDENS
2800	AMPHIPODA O.	AMPHIPODA O.
2805	PARAMPHITHOE HYSTRIX	PARAMPHITHOE HYSTRIX
2806	PARDALISCIDAE F.	PARDALISCIDAE F.
2809	PARATHEMISTO SP.	PARATHEMISTO SP.
2810	HYPERIA SP.	HYPERIA SP.
2811	GAMMARIDAE F.	GAMMARIDAE F.
2812	MELITA DENTATA	MELITA DENTATA
2813	CASCO BIGELOWI	CASCO BIGELOWI
2814	MELITA SP.	MELITA SP.
2815	STENOTHOE BREVICORNIS	S. BREVICORNIS
2818	DULICHIA MONACANTHA	D. MONACANTHA
2819	GAMMARIDEA S.O.	WHITE,G. AMPHI
2820	GAMMARUS SP.	GAMMARUS SP.
2821	CERADOCUS TORELLI	CERADOCUS TORELLI
2822	LEPTOCHEIRUS PINGUIS	PURPLE AMPHI
2823	UNCIOLA SP.	RED AMPHI
2824	ISOPODA O.	RED ISOPOD
2825	MAERA LOVENI	MAERA LOVENI
2827	DULICHIA SP.	DULICHIA SP.
2828	TIRON SP.	TIRON SP.
2829	HIPPOMEDON SERRATUS	H. SERRATUS
2830	LYSIANASSIDAE F.	LYSIANASSIDAE F.
2831	ORCHOMONELLA SP.	ORCHOMONELLA SP.
2832	TMETONYX SP.	TMETONYX SP.
2833	ANONYX SP.	ANONYX SP.
2834	ORCHOMONELLA PINGUIS	O. PINGUIS
2835	HIPPOMEDON DENTERULATUS	H. DENTERULATUS
2836	HIPPOMEDON PROPINQUUS	H. PROPINQUUS
2837	TMETONYX CICADA	TMETONYX CICADA
2838	HIPPOMEDON SP.	HIPPOMEDON SP.
2839	UNCIOLA INERMIS	UNCIOLA INERMIS
2840	COROPHIIDAE F.	COROPHIIDAE F.
2841	AORIDAE F.	AORIDAE F.
2842	PAROEDICEROS SP.	PAROEDICEROS SP.
2843	LILLJEBORGIA SP.	LILLJEBORGIA SP.
2844	ANONYX SARSI	ANONYX SARSI

2845	PHOXOCEPHALIDAE F.	PHOXOCEPHALIDAE F.
2846	RHACHOTROPIS SP.	RHACHOTROPIS SP.
2847	RHACHOTROPIS INFLATA	R. INFLATA
2848	RHACHOTROPIS ACULEATA	R. ACULEATA
2849	HARPINIA PROPINQUA	H. PROPINQUA
2850	TIRONIDAE F.	TIRONIDAE F.
2851	SYRRHOE SP.	SYRRHOE SP.
2852	HARPINIA SP.	HARPINIA SP.
2853	PHOXOCEPHALUS HOLBOLLI	P. HOLBOLLI
2854	PHOXOCEPHALUS SP.	PHOXOCEPHALUS SP.
2855	AMPELISCIDAE F.	AMPELISCIDAE F.
2856	HAPLOOPS LAEVIS	HAPLOOPS LAEVIS
2857	AMPELISCA AGASSIZI	FOUR-EYED AMPHIPOD
2858	AMPELISCA SP.	AMPELISCA SP.
2859	GAMMAROPSIS MACULATUS	G. MACULATUS
2860	AMPHITHOIDAE F.	AMPHITHOIDAE F.
2861	ROZINANTE FRAGILIS	ROZINANTE FRAGILIS
2862	HARPINIA CRENULATA	H. CRENULATA
2865	PONTOGENEIIDAE F.	P. F.
2866	NEOPLEUSTES PULCHELLUS	N. PULCHELLUS
2867	PLEUSTES PANOPLA	PLEUSTES PANOPLA
2870	CAPRELLIDAE F.	CAPRELLIDAE F.
2871	CAPRELLA LINEARIS	CAPRELLA LINEARIS
2872	CAPRELLA SEPTENTRIONALIS	C. SEPTENTRIONALIS
2873	AEGININA LONGICORNIS	A. LONGICORNIS
2874	CAPRELLA SP.	CAPRELLA SP.
2875	HELIRAGES FULVOCINCTUS	H. FULVOCINCTUS
2876	HALIRAGOIDES INERMIS	H. INERMIS
2880	OEDICEROTIDAE F.	OEDICEROTIDAE F.
2881	MONOCULODES SP.	MONOCULODES SP.
2882	PAROEDICEROS LYNCEUS	P. LYNCEUS
2883	PAROEDICEROS PROPINGUIS	P. PROPINGUIS
2884	PAROEDICEROS LONGIMANUS	P. LONGIMANUS
2885	MONOCULODES EDWARDSI	M. EDWARDSI
2891	NYMPHON LONGITARSE	N. LONGITARSE
2892	NYMPHON MACRUM	NYMPHON MACRUM
2893	NYMPHON SP.	NYMPHON SP.
2894	HAUSTORIIDAE	HAUSTORIIDAE
2895	PRISCILLINA ARMATA	P. ARMATA
2896	ANURIDA MARITIMA	ANURIDA MARITIMA
2897	ISCHYROCERIDAE F.	ISCHYROCERIDAE F.
2899	CLAUSOCALANUS SP.	CLAUSOCALANUS SP.
2900	COPEPODA S.C.	COPEPODA S.C.
2901	COPEPODA S.C.,LARGE	COPEPODS MORE THAN 3 MM
2902	COPEPODA S.C.,SMALL	COPEPODS 3 MM OR LESS
2903	HYPERIA GALBA	BIG-EYED AMPHIPOD
2904	PARATHEMISTO COMPRESSA	P. COMPRESSA
2905	HYPERIIDEA S.O.	HYPERIIDEA S.O.
2906	HYPERIIDAE F.	HYPERIIDAE F.
2907	PARATHEMISTO OBLIVIA	P. OBLIVIA
2908	MONSTRILLA SP.	COPEPOD
2909	PARACALANUS, CALOCALANUS SP.	P. ,CALOCALANUS
2910	CALANUS SP.	CALANUS SP.
2911	CALANUS FINMARCHICUS	C. FINMARCHICUS
2912	CALANUS HYPERBOREUS	C. HYPERBOREUS
2913	CANDACIA SP.	CANDACIA SP.
2914	CENTROPAGES SP.	C. SP.
2915	CANDACIA ARMATA	CANDACIA ARMATA
2916	CENTROPAGES BRADYI	C. BRADYI
2917	PSEUDOCALANUS SP.	PSEUDOCALANUS SP.
2918	PSEUDOCALANUS ELONGATUS	P. ELONGATUS
2919	TEMORA SP.	TEMPORA SP.
2920	OITHONA SP.	OITHONA SP.
2921	EUCHAETA NORVEGICA	E. NORVEGICA
2922	EUCHIRELLA SP.	EUCHIRELLA SP.
2923	ACARTIA LONGIREMIS	A. LONGIREMIS
2924	METRIDIA LUCENS	METRIDIA LUCENS
2925	METRIDIA LONGA	METRIDIA LONGA
2926	PLEUROMAMMA SP.	PLEUROMAMMA SP.
2927	SPHYRION LUMPI	SPHYRION LUMPI
2928	OITHONA SIMILIS	OITHONA SIMILIS
2929	LERNAEOCERA BRANCHIALIS	L. BRANCHIALIS
2930	OITHONA SPINIROSTRIS	O. SPINIROSTRIS
2931	CLAVELLA SP.	CLAVELLA SP.
2932	PARACALANUS SP.	PARACALANUS SP.
2933	METRIDIA SP.	METRIDIA SP.
2934	PARACALANUS PARVUS	PARACALANUS PARVUS
2935	CENTROPAGES TYPICUS	C. TYPICUS
2936	TEMORA LONGICORNIS	T. LONGICORNIS
2937	MICROCALANUS PUSILLUS	M. PUSILLUS
2938	COPEPODA,NAUPLII	COPEPODA,NAUPLII
2939	CALANOIDA O.	CALANOIDA O.
2940	TANAIDAE F.	TANAIDAE F.
2941	PARATHEMISTO GAUDICHAUDI	P. GAUDICHAUDI
2942	AETIDEUS ARMATUS	AETIDEUS ARMATUS
2943	CALIGUS SP.	CALIGUS SP.
2945	CYCLOPOIDA O.	CYCLOPOIDA O.
2946	PHRONIMA SP.	PHRONIMA SP.
2950	JANIRA ALTA	JANIRA ALTA
2960	NEBALIA BIPES	NEBALIA SHRIMP
2961	NEBALIA SP.	NEBALIA SP.
2965	EUDORELLA SP.	EUDORELLA SP.
2966	EUDORELLA TRUNCATULA	E. TRUNCATULA
2968	CIROLANA SP.	CIROLANA SP.
2970	CUMACEA O.	CUMACEA O.
2971	DIASTYLIS SP.	DIASTYLIS SP.
2972	DIASTYLIS RATHKEI	DIASTYLIS RATHKEI
2973	DIASTYLIS POLITA	DIASTYLIS POLITA
2974	LEPTOCUMA MINOR	LEPTOCUMA MINOR
2975	LEUCON NASICOIDES	LEUCON NASICOIDES
2976	EUDORELLA EMARGINATA	E. EMARGINATA
2977	CAMPYLASPIS SP.	CAMPYLASPIS SP.
2978	DIASTYLIS QUADRISPINOSA	D. QUADRISPINOSA
2979	EUDORELLA PUSILLA	E. PUSILLA
2980	ISOPODA O.	ISOPODA O.
2981	AEGA PSORA	AEGA PSORA
2982	IDOTEA BALTICA	IDOTEA BALTICA
2983	IDOTEA PHOSPHOREA	IDOTEA PHOSPHOREA

2984	CHIRIDOTEA TUFTSI	CHIRIDOTEA TUFTSI
2985	SYNIDOTEA NODULOSA	S. NODULOSA
2986	MUNNOPSIS TYPICA	MUNNOPSIS TYPICA
2987	PHRYXUS ABDOMINALIS	P. ABDOMINALIS
2988	BOPYROIDES HIPPOLYTES	B. HIPPOLYTES
2989	EDOTEA TRILOBA	BROWN ISOPOD
2990	CIRRIPEDIA S.C.	BARNACLES
2991	CIROLANIDAE F.	CIROLANIDAE F.
2992	IDOTEIDAE F.	IDOTEIDAE F.
2993	GNATHIA CERINA	GNATHIA CERINA
2994	JAERA MARINA	LITTLE SHORE ISOPOD
2995	BALANIDAE F.	BALANIDAE F.
2996	IDOTEA SP.	IDOTEA SP.
2997	CHIRIDOTEA SP.	CHIRIDOTEA SP.
2998	CIROLANA POLITA	CIROLANA POLITA
2999	CALATHURA BRANCHIATA	ISOPOD
3000	ANNELIDA P.	SEGMENTED WORMS
3030	AEGIDAE F.	AEGIDAE F.
3050	ANTHURIDEA S.O.	ANTHURIDEA S.O.
3051	ANTHURIDAE F.	ANTHURIDAE F.
3085	EUNICIDAE F.	EUNICIDAE F.
3100	POLYCHAETA C.	BRISTLE WORMS
3101	POLYCHAETA C.,LARGE	LARGE POLYCHAETE, 3MM DIA
3102	POLYCHAETA C.,SMALL	SMALL POLYCHAETE 3MM DIA
3103	LUMBRINERIS SP.	LUMBRINERIS SP.
3104	NEPHTYS SP.	NEPHTYS SP.
3105	STERNASPIS SP.	STERNASPIS SP.
3106	POLYCHAETA LARVAE	POLYCHAETA LARVAE
3107	ARABELLIDAE F.	ARABELLIDAE F.
3108	DRILONEREIS MAGNA	ARABELLID THREAD WORM
3109	EUNICE PENNATA	EUNICE PENNATA
3110	PHYLLODOCE SP.	PHYLLODOCE SP.
3111	PHYLLODOCE GROENLANDICA	P. GROENLANDICA
3112	ETEONE SP.	PADDLE WORMS
3113	ETEONE TRILINEATA	PADDLE WORM
3114	PHYLLODOCIDAE F.	PHYLLODOCIDAE F.
3115	NEPHTYIDAE F.	NEPHTYIDFAE F.
3116	ARABELLA IRICOLOR	OPAL WORM
3117	LUMBRINEREIDAE F.	LUMBRINEREIDAE F.
3118	LUMBRINERIS TENUIS	L. TENUIS
3119	NINOE NIGRIPES	NINOE NIGRIPES
3120	GONIADA MACULATA	GONIADA MACULATA
3121	GONIADA SP.	CHEVRON WORMS
3122	LUMBRINERIS FRAGILIS	L. FRAGILIS
3123	LUMBRINERIS LATREILLI	L. LATREILLI
3124	GONIADIDAE F.	GONIADIDAE F.
3125	NICOMACHE CANADENSIS	N. CANADENSIS
3126	SYLLIDAE F.	SYLLIDAE F.
3127	GONIADA NORVEGICA	GONIADA NORVEGICA
3128	EXOGONE VERUGERA	EXOGONE VERUGERA
3129	MELINNIA ELIZABETHAE	M. ELIZABETHAE
3130	NEREIS SP.	NEREIS SP.
3131	NEREIS PELAGICA	NEREIS PELAGICA
3132	NEREIS GRAYI	NEREIS GRAYI
3133	CAPITELLIDAE F.	CAPITELLIDAE F.
3134	TOMOPTERIDAE F.	TOMOPTERIDAE F.
3135	NEREIS ZONATA	NEREIS ZONATA
3136	POTAMILLA RENIFORMIS	P. RENIFORMIS
3137	MELINNA CRISTATA	AMPHARETID WORM
3138	SABELLIDAE F.	SABELLIDAE F.
3139	PECTINARIIDAE F.	PECTINARIIDAE F.
3140	SABELLA SP.	SABELLA SP.
3141	RHODINE SP.	RHODINE SP.
3142	PECTINARIA GOULDII	TRUMPET WORM
3143	MALDANIDAE F.	FILAMENT TUBE WORM
3144	PECTINARIA SP.	PECTINARIA SP.
3145	PRAXILLELLA SP.	PRAXILLELLA SP.
3146	AMPHARETIDAE F.	AMPHARETIDAE F.
3147	POTAMILLA NEGLECTA	FAN WORM
3148	AMPHITRITE SP.	TEREBELLID WORM
3149	PECTINARIA GRANULATA	P. GRANULATA
3150	NEREIDAE F.	NEREIDAE F.
3151	TEREBELLIDES STROEMI	T. STROEMI
3152	SCALIBREGMA INFLATUM	SCALIBREGMA INFLATUM
3153	OPHELIIDAE	OPHELIIDAE F.
3154	SAMYTHA SEXCIRRATA	SAMYTHA SEXCIRRATA
3155	ANOBOTHRUS GRACILIS	A. GRACILIS
3156	OPHELIA LIMACINA	OPHELIA LIMANCIA
3157	OPHELIA ACUMINUTA	OPHELIA ACUMINUTA
3158	APISTOBRANCHIDAE F.	APISTOBRANCHIDAE F.
3159	OPHELIA SP.	OPHELIA SP.
3160	TEREBELLIDAE F.	TEREBELLIDAE F.
3161	ARENICOLA MARINA	LUGWORM
3162	ARICIDEA SP.	ARICIDEA SP.
3163	LEIOCHONE SP.	LEIOCHONE SP.
3164	SPIONIDA F.	SPIONIDA F.
3165	STERNASPIS SCUTATA	S. SCUTATA
3166	NOTHRIA CONCHYLEGA	N. CONCHYLEGA
3167	SCOLOPLOS SP.	ORBINIID WORMS
3168	CHONE DUNERI	CHONE DUNERI
3169	PARAONIS LYRA	PARAONIS LYRA
3170	FLABELLIGERIDA F.	FLABELLIGERIDA F.
3171	PHERUSA PHERUSA	FLABELLIGERID WORM
3172	BRADA SP.	FLABELLIGERID WORMS
3173	PHERUSA SP.	LABELLIGERID WORMS
3174	DIPLOCIRRUS HIRSUTUS	FLABELLIGERID WORM
3175	OLIGOCHAETA C.	AQUATIC EARTHWORMS
3176	AMPHARETE SP.	AMPHARETE SP.
3177	AMPHARETE FINMARCHICA	A. FINMARCHICA
3179	TRAVISIA CARNEA	TRAVISIA CARNEA
3180	THRACIIDAE F.	THRACIIDAE F.
3181	AGLAOPHAMUS CIRCINATA	A. CIRCINATA
3182	NEPHTYS BUCERA	NEPHTYS BUCERA
3183	NEPHTYS INCISA	NEPHTYS INCISA
3185	LEPTONIDAE F.	LEPTONIDAE F.
3187	EXOGONE SP.	EXOGONE SP.
3190	LUCINIDAE F.	LUCINIDAE F.
3191	THELEPUS CINCINNATUS	THELEPUS CINCINNATUS

3194	OWENIIDAE F.	OWENIIDAE F.
3195	HESIONIDAE F.	HESIONIDAE F.
3196	OWENIA FUSIFORMIS	OWENIA FUSIFORMIS
3200	APHRODITA HASTATA	SEA MOUSE
3210	APHRODITIDAE F.	APHRODITIDAE F.
3211	APHRODITA ACULEATA (OBSOLETE)	APHRODITA ACULEATA
3212	APHRODITA SP.	APHRODITA SP.
3221	CHONE SP.	CHONE SP.
3222	EUCHONE SP.	EUCHONE SP.
3230	GLYCERIDAE F.	GLYCERIDAE F.
3240	CARIDEA SO.	CARIDEA SO.
3270	ORBINIIDAE F.	ORBINIIDAE F.
3280	CIRRATULIDAE F.	CIRRATULIDAE F.
3300	GEPHYREA (SIPUNCULA) P.	G. (SIPUNCULA)
3311	ECHIURUS ECHIURUS	ECHIURUS ECHIURUS
3312	THEMISTE SP.	THEMISTE SP.
3313	PHASCOLOSOMA GOULDII	GOULD'S SIPUNCULID
3314	PHASCOLION STROMBI	P. STROMBI
3320	PHASCOLOSOMA SP.	PHASCOLOSOMA SP.
3330	ECHIURIDA P.	ECHIURIDA P.
3340	ECHIURIDAE F.	ECHIURIDAE F.
3400	ACANTHOCEPHALA P.	ACANTHOCEPHALA P.
3450	PRIAPULIDA C.	PRIAPULIDA C.
3451	PRIAPULUS CAUDATUS	PRIAPULUS
3460	ONUPHIDAE F.	ONUPHIDAE F.
3500	POLYNOIDAE F.	POLYNOIDAE F.
3501	LEPIDONOTUS SQUAMATUS	L. SQUAMATUS
3502	GATTYANA SP.	GATTYANA SP.
3550	GLYCERA SP.	BLOOD WORMS
3551	GLYCERA CAPITATA	BLOOD WORM
3600	HETEROPODA/PTEROPODA	SEA SNAILS,DEA BUTTERFLIES
3601	HETEROPODA	PELAGIC SEA SNAIL
3700	SIPUNCULUS SP.	SIPUNCULUS SP.
4000	MOLLUSCA P.	MOLLUSCA P.
4005	MOLLUSCA LARVAE	MOLLUSCA LARVAE
4110	SCAPHOPODA C.	TUSK OR TOOTHSHELLS
4200	GASTROPODA O.	SNAILS AND SLUGS
4201	AMPHISSA HALIAEETI	A. HALIAEETI
4202	PUNCTURELLA NOACHINA	KEYHOLE LIMPET
4209	BUCCINIDAE F.	BUCCINIDAE F.
4210	BUCCINUM SP.	WHELKS
4211	BUCCINUM UNDATUM	WAVE WHELK,COMMON EDIBLE
4212	BUCCINUM SCALARIFORME	SILKY BUCCINUM
4216	PROPEBELA CANCELLATA	CANCELLATE LORA
4221	LUNATIA HEROS	MOONSHELL
4222	NATICA CLAUSA	LITTLE MOONSHELL
4223	MARGARITES CINERA (OBSOLETE)	MARGARITES CINERA
4224	MARGARITES COSTALIS	M. COSTALIS
4225	MARGARITES GROENLANDICA	M. GROENLANDICA
4227	NEPTUNEA DECEMCOSTATA	NEW ENGLAND NEPTUNE
4228	COLUS SP.	SPINDLE SHELL
4229	TURRITELLOPSIS SP.	TURRITELLOPSIS SP.
4230	APORRHAIS SP.	DUCK OR PELICAN FOOT
4231	NUCELLA LAPILLUS	NUCELLA LAPILLUS
4232	ILYANASSA OBSOLETA	MUD SNAIL
4233	NASSA BIVITTATA	DOG WHELK
4235	NASSARIIDAE OR THAISIDAE F.	DOG WHELKS
4240	EPITONIUM SP.	EPITONIUM
4250	LITTORINIDAE F.	PERIWINKLES
4251	SKENEOPSIS SP.	SKENES
4252	VELUTINA LAEVIGATA	VELVET SHELL
4253	FISSURELLIDAE F.	KEYHOLE LIMPID
4254	MARGARITES HELICINA	M. HELICINA
4255	TROCHIDAE F.	TOP SHELLS
4256	PHILINE SINUATA	PHILINE SINUATA
4257	CYLICHNA ALBA	CYLICHNA ALBA
4258	LUNATIA TRISERIATA	SPOTTED NORTHERN MOONTAIL
4259	CALLIOSTOMA OCCIDENTALE	C. OCCIDENTALE
4260	AMAUROPSIS ISLANDICA	A. ISLANDICA
4300	BIVALVIA C.	BIVALVIA C.
4301	ENSIS DIRECTUS	RAZOR SHELL CLAM
4302	THYASIRA SP.	THYASIRA SP.
4303	TELLINA SP.	TELLINA SP.
4304	ARCTICA ISLANDICA	OCEAN QUAHAUG
4305	PANDORA GOULDIANA	PANDORA GOULDIANA
4306	CUSPIDARIA GLACIALIS	GLACIER DIPPER SHELL
4307	ASTARTE UNDATA	ASTARTE UNDATA
4308	NUCULA SP.	NUCULA SP.
4309	MYA TRUNCATA	MYA TRUNCATA
4310	PRIONODESMATA,TELEODESMATA S.C.	CLAMS (NS)
4311	VENUS MERCENARIA (OBSOLETE)	QUAHAUG
4312	CYRTODARIA SILIQUA	BANK CLAM
4313	MACOMA SP.	MACOMA SP.
4314	PITAR MORRHUANA	MORRHUA VENUSNA
4315	SILIQUA SP.	RAZOR CLAM
4316	ASTARTE SP.	ASTARTE SP.
4317	SPISULA SOLIDISSIMA	BAR,SURF CLAM
4318	MYA ARENARIA	SOFT SHELL CLAM
4319	HIATELLA ARCTICA	SOFT SHELL OR LONG NECK CLAM
4320	PECTINIDAE F.	SCALLOPS
4321	PLACOPECTEN MAGELLANICUS	SEA SCALLOP
4322	CHLAMYS ISLANDICUS	ICELAND SCALLOP
4323	MERCENARIA MERCENARIA	HARD CLAM
4324	ARGOPECTEN IRRADIANS	BAY SCALLOP
4325	ARGOPECTEN GIBBUS	CALICO SCALLOP
4326	CRASSOSTREA VIRGINICA	AMERICAN CUPPED OYSTER
4327	CYRTODARIA SP.	CYRTODARIA SP.
4328	ANOMIIDAE F.	ANOMIIDAE F.
4329	VENERIDAE F.	VENERIDAE F.
4330	MYTILIDAE F.	MUSSELS (NS)
4331	MYTILUS EDULIS	COMMON MUSSELS
4332	MODIOLUS MODIOLUS	HORSE MUSSELS
4333	THYASIRIDAE F.	THYASIRIDAE F.
4334	MUSCULUS NIGER	MUSCULUS NIGER
4335	STROMBUS AND BUSYCON SP.	CONCHS
4336	AEQUIPECTEN GLYPTUS	A. GLYPTUS
4337	BATHYARCA PECTUNCULOIDES	B. PECTUNCULOIDES
4338	ASTARTE CASTANEA	ASTARTE CASTANEA

4339	BATHYARCA SP.	BATHYARCA SP.
4340	CARDIIDAE F.	COCKLES
4341	CARDIUM SP.	CARDIUM SP.
4342	CLINOCARDIUM CILIATUM	ICELAND COCKLE
4343	SERRIPES GROENLANDICUS	GREENLAND COCKLE
4344	VENERICARDIA BOREALIS	HEART SHELL
4345	CERASTODERMA PINNULATUM	NORTHERN DWARF COCKLE
4346	SOLEMYA BOREALIS	SOLEMYA BOREALIS
4347	LIMATULA SP.	LIMATULA SP.
4350	NUCULIDAE F.	NUT SHELLS
4351	NUCULANA SP.	NUCULANA SP.
4352	NUCULANA TENUISULCATA	THIN NUT CLAM
4353	NUCULANA BUCCATA	NUCULANA BUCCATA
4354	YOLDIA SP.	YOLDIA SP.
4355	SPISULA POLYNYMA	STIMPSON'S SURF CLAM
4356	YOLDIA SAPOTILLA	Y. SAPOTILLA
4360	NUCULANIDAE F.	NUCULANIDAE F.
4361	NUCULA TENUIS	NUCULA TENUIS
4370	TELLINIDAE F.	TELLINIDAE F.
4380	ANOMIA SIMPLEX	ANOMIA SIMPLEX
4381	ANOMIA SP.	ANOMIA SP.
4400	NUDIBRANCHIA O.	SEA SLUGS
4410	DENDRONOTUS SP.	BUSHY BACKSLUG
4420	AEOLIDIA SP.	PLUMED SEASLUG
4430	CYLICHNIDAE F.	CANOE SHELLS
4431	SCAPHANDER PUNCTOSTRIATUS	GIANT CANOE BUBBLE
4500	CEPHALOPODA C.	CEPHALOPODA C.
4501	TEUTHOIDEA O.	TEUTHOIDEA O.
4502	MYOPSIDA S.O.	MYOPSIDA S.O.
4503	OEGOPSIDA S.O.	OEGOPSIDA S.O.
4504	SEPIOIDEA O.	SEPIOIDEA O.
4510	OMMASTREPHIDAE F.	OMMASTREPHIDAE F.
4511	ILLEX ILLECEBROSUS	SHORT-FIN SQUID
4512	LOLIGO PEALEI	LONG-FINNED SQUID
4513	OMMASTREPHES SP.	OMMASTREPHES SP.
4514	LOLIGINIDAE,OMMASTREPHIDAE F.	SQUID (NS)
4515	ILLEX SP.	ILLEX SP.
4516	OMMASTREPHINAE S.F.	OMMASTREPHINAE S.F.
4517	ORNITHOTEUTHIS SP.	ORNITHOTEUTHIS SP.
4518	OMMASTREPHES BARTRAMI	O. BARTRAMI
4519	OMMASTREPHES PTEROPSUS	O. PTEROPSUS
4520	INCIRRATA S.O.	INCIRRATA S.O.
4521	OCTOPODA O.	OCTOPUS
4522	SEMIROSSIA TENERA	SEMIROSSIA TENERA
4523	ROSSIA HYATTI (OBSOLETE)	ROSSIA HYATTI
4524	BATHYPOLYPUS ARCTICUS	B. ARCTICUS
4525	ROSSIA PALPEBROSA	ROSSIA PALPEBROSA
4526	ROSSIA MEGAPTERA	ROSSIA MEGAPTERA
4527	STAUROTEUTHIDAE F.	S. F.
4528	BOLITAENIDAE F.	BOLITAENIDAE F.
4529	OCTOPODIDAE F.	OCTOPODIDAE F.
4530	TREMOCTOPODIDAE F.	TREMOCTOPODIDAE F.
4531	ARGONAUTA ARGO	PAPER NAUTILUS
4532	ARGONAUTIDAE F.	ARGONAUTIDAE F.
4533	ALLOPOSIDAE F.	ALLOPOSIDAE F.
4534	OCYTHOIDAE F.	OCYTHOIDAE F.
4535	VAMPYROTEUTHIDAE F.	VAMPYROTEUTHIDAE F.
4536	SEPIOLODAE F.	SEPIOLIDAE F.
4537	HETEROTEUTHINAE S.F.	HETEROTEUTHINAE S.F.
4538	HETEROTEUTHIS DISPAR	H. DISPAR
4539	SPIRULIDAE F.	SPIRULIDAE F.
4540	LOLIGINIDAE F.	LOLIGINIDAE F.
4541	LOLIGO SP.	LOLIGO SP.
4542	LYCOTEUTHIDAE F.	LYCOTEUTHIDAE F.
4543	LAMPADIOTEUTHIS SP.	LAMPADIOTEUTHIS SP.
4544	SELENOTEUTHIS SP.	SELENOTEUTHIS SP.
4545	ENOPLOTEUTHIDAE F.	ENOPLOTEUTHIDAE F.
4546	ENOPLOTEUTHINAE S.F.	ENOPLOTEUTHINAE S.F.
4547	ENOPLOTEUTHIS SP.	ENOPLOTEUTHIS SP.
4548	ENOPLOTEUTHIS ANAPSIS	E. ANAPSIS
4549	ENOPLOTEUTHIS LEPTURA	E. LEPTURA
4550	ABRALIA SP.	ABRALIA SP.
4551	ABRALIA REDFIELDI	ABRALIA REDFIELDI
4552	ABRALIA VERANYI	ABRALIA VERANYI
4553	ABRALIOPSIS SP.	ABRALIOPSIS SP.
4554	ABRALIOPSIS PFEFFERI	A. PFEFFERI
4556	ANCISTROCHEIRINAE S.F.	ANCISTROCHEIRINAE S.F.
4557	THELIDIOTEUTHIS SP.	THELIDIOTEUTHIS SP.
4558	PYROTEUTHINAE S.F.	PYROTEUTHINAE S.F.
4559	PTERYGIOTEUTHIS SP.	PTERYGIOTEUTHIS SP.
4560	PYROTEUTHIS SP.	PYROTEUTHIS SP.
4561	OCTOPOTEUTHIDAE F.	OCTOPOTEUTHIDAE F.
4562	OCTOPOTEUTHIS SP.	OCTOPOTEUTHIS SP.
4563	ONYCHOTEUTHIDAE F.	ONYCHOTEUTHIDAE F.
4564	ONYCHOTEUTHIS SP.	ONYCHOTEUTHIS SP.
4565	ONYKIA SP.	ONYKIA SP.
4566	CHIROTEUTHIDAE F.	CHIROTEUTHIDAE F.
4567	CHIROTEUTHIS SP.	CHIROTEUTHIS SP.
4568	GONATIDAE F.	GONATIDAE F.
4569	GONATUS SP.	GONATUS SP.
4570	LEPIDOTEUTHIDAE F.	LEPIDOTEUTHIDAE F.
4571	TETRONYCHOTEUTHIS SP.	T. SP.
4572	PHOLIDOTEUTHIS SP.	PHOLIDOTEUTHIS SP.
4573	ARCHITEUTHIDAE F.	ARCHITEUTHIDAE F.
4574	HISTIOTEUTHIDAE F.	HISTIOTEUTHIDAE F.
4575	HISTIOTEUTHIS BONNELLII	H. BONNELLII
4576	HISTIOTEUTHIS CELETARIA CELETARIA	H. C. CELETARIA
4577	HISTIOTEUTHIS CORONA CORONA	H. C. CORONA
4578	HISTIOTEUTHIS DOFLEINI	H. DOFLEINI
4579	HISTIOTEUTHIS ELONGATA	H. ELONGATA
4580	HISTIOTEUTHIS REVERSA	H. REVERSA
4581	BATHYTEUTHIDAE F.	BATHYTEUTHIDAE F.
4582	CTENOPTERYX SP.	CTENOPTERYX SP.
4583	BRACHIOTEUTHIS SP.	BRACHIOTEUTHIS SP.
4584	MASTIGOTEUTHIS SP.	MASTIGOTEUTHIS SP.
4585	CRANCHIIDAE F.	CRANCHIIDAE F.
4586	CRANCHIINAE S.F.	CRANCHIINAE S.F.
4587	CRANCHIA SP.	CRANCHIA SP.

4588	LEACHIA SP.	LEACHIA SP.
4589	LIOCRANCHIA SP.	LIOCRANCHIA SP.
4590	TAONIINAE S.F.	TAONIINAE S.F.
4591	TAONIUS SP.	TAONIUS SP.
4592	TEUTHOWENIA SP.	TEUTHOWENIA SP.
4593	GALITEUTHIS SP.	GALITEUTHIS SP.
4594	HELICOCRANCHIA SP.	HELICOCRANCHIA SP.
4595	MEGALOCRANCHIA SP.	MEGALOCRANCHIA SP.
4596	EGEA SP.	EGEA SP.
4600	PTEROPODA	SEA BUTTERFLIES
4611	CLIONE LIMACINA	CLIONE LIMACINA
4621	LIMACINA HELICINA	HELOCID PTEROPOD
4622	LIMACINA RETROVERSA	SHELLED SEA BUTTERFLY
4700	POLYPLACOPHORA C.	CHITONS
4711	AMICULA VESTITA	AMICULA VESTITA
4712	ISCHNOCHITON SP.	ISCHNOCHITON SP.
4713	TONICELLA RUBRA	RED NORTHERN CHITON
4714	LEPIDOPLEURUS CANCELLATUS	ARCTIC CANCELLATE CHITON
4720	CHAETODERMA SP.	CHAETODERMA SP.
5000	CHAETOGNATHA P.	ARROW WORMS
5011	SAGITTA ELEGANS	SAGITTA ELEGANS
5012	SAGITTA SP.	ARROW WORMS
5100	PYCNOGONIDA S.P.	SEA SPIDER
5101	PYCNOGONIDAE O.	PYCNOGONIDAE O.
5102	PYCNOGONUM LITTORALE	ANEMONE SEA SPIDER
5200	ARCHAEOGASTROPODA O.	LIMPET (NS)
5201	CRUCIBULUM STRIATUM	CUP AND SAUCER LIMPET
5500	RHYNCHOCOELA P.	RHYNCHOCOELA P.
6000	ECHINODERMATA P.	SPINY SKINNED ANIMALS
6100	ASTEROIDEA S.C.	ASTEROIDEA S.C.
6110	ASTERIAS SP.	ASTERIAS SP.
6111	ASTERIAS VULGARIS	PURPLE STARFISH
6113	LEPTASTERIAS POLARIS	L. POLARIS
6115	CTENODISCUS CRISPATUS	MUD STAR
6117	HIPPASTERIA PHRYGIANA	H. PHRYGIANA
6119	HENRICIA SANGUINOLENTA	BLOOD STAR
6121	SOLASTER ENDECA	PURPLE SUNSTAR
6123	SOLASTER PAPPOSUS	SUN STAR
6125	PTERASTER MILITARIS	PTERASTER MILITARIS
6127	PENTAGONASTER TOSIA	P. TOSIA
6128	PSILASTER ARCHASTER	P. ARCHASTER
6129	PORANIOMORPHA HISPIDA	P. HISPIDA
6130	PORANIOMORPHA BOREALIS	P. BOREALIS
6131	DIPLOPTERASTER MULTIPES	D. MULTIPES
6132	LEPTASTERIAS MULLERI	MULLER'S STARFISH
6133	PONTASTER SP.	PONTASTER SP.
6134	LEPTASTERIAS TENERA	SLENDER ARMED SEA STAR
6135	ASTROTECTEN DUPLICATUS	A. DUPLICATUS
6200	OPHIUROIDEA S.C.	BRITTLE STAR
6211	OPHIOPHOLIS ACULEATA	DAISY
6212	OPHIURA SP.	OPHIURA SP.
6213	OPHIURA SARSI	OPHIURA SARSI
6215	OPHIURA ROBUSTA	OPHIURA ROBUSTA
6217	STEGOPHIURA NODOSA	S. NODOSA
6300	GORGONOCEPHALIDAE,ASTERONYCHIDAE F	BASKET STARS
6309	GORGONOCEPHALIDA F.	GORGONOCEPHALIDA F.
6310	GORGONOCEPHALUS SP.	GORGONOCEPHALUS SP.
6397	ECHINOIDEA C.	SAND DOLLARS,URCHINS (NS)
6397	ECHINOIDEA C.	SAND DOLLARS,URCHINS (NS)
6400	STRONGYLOCENTROTUS SP.	SEA URCHINS
6411	STRONGYLOCENTROTUS DROEBACHIENSIS	S. DROEBACHIENSIS
6412	STRONGYLOCENTROTUS ECHINOIDES	S. ECHINOIDES
6413	BRISASTER FRAGILIS	HEART URCHIN
6420	ARABACIA SP.	ARABACIA SP.
6421	ARABACIA PUNCTULATA	PURPLE SEA URCHIN
6500	CLYPEASTEROIDA O.	SAND DOLLARS
6511	ECHINARACHNIUS PARMA	E. PARMA
6600	HOLOTHUROIDEA C.	SEA CUCUMBERS
6611	CUCUMARIA FRONDOSA	CUCUMARIA FRONDOSA
6700	PSOLUSES,THYONES,ETC. (NS)	PSOLUSES,THYONES,ETC. (NS)
6705	PHYLLOPHORIDAE F.	PHYLLOPHORIDAE F.
6710	PSOLUS SP.	PSOLUS SP.
6711	HAVELOCKIA SCABRA	HAVELOCKIA SCABRA
6712	THYONE UNISEMITA	THYONE UNISEMITA
6713	PSOLUS FABRICII	SCARLETT PSOLUS
6714	THYONE SP.	THYONE SP.
6715	PSOLUS PHANTAPUS	PSOLUS PHANTAPUS
6716	DUASMODACTYLA COMMUNE	D. COMMUNE
6717	CAUDINA ARENATA	CAUDINA ARENATA
6718	MOLPADIA SP.	MOLPADIA SP.
6719	CHIRIDOTA LAEVIS	CHIRIDOTA LAEVIS
6720	MOLPADIA MUSCULUS	MOLPADIA MUSCULUS
6801	ECHINOCARDIUM CORDATUM	E. CORDATUM
6900	CRINOIDEA C.	SEA LILIES
7000	PARASITES,ROUND WORMS	PARASITES,ROUND WORMS
7100	NEMATODA C.	NEMATODA C.
7110	PORROCAECUM SP.	PORROCAECUM SP.
7111	PORROCAECUM DECIPIENS	P. DECIPIENS
7113	CONTRACAECUM SP.	CONTRACAECUM SP.
7116	ANISAKIS SP.	ANISAKIS SP.
7500	TURBELLARIA C.	TURBELLARIA C.
7600	TREMATODA C.	TREMATODA C.
7700	CESTODA C.	CESTODA C.
8000	CTENOPHORES,COELENTERATES,PORIFERA	CTENOPHORES,ETC.
8100	CTENOPHORA P.	COMB JELLIES
8111	BEROE CUCUMIS	BEROE CUCUMIS
8113	PLEUROBRACHIA SP.	PLEUROBRACHIA SP.
8200	COELENTERATA P.	COELENTERATA P.
8208	ACTINARIA C.	ACTINARIA C.
8210	PHYSALIA PELAGICA	MAN OF WAR
8300	ANTHOZOA C.	SEA ANEMONE
8311	METRIDIUM SENILE	METRIDIUM SENILE
8313	STOMPHIA COCCINEA	STOMPHIA COCCINEA
8315	TEALIA FELINA	TEALIA FELINA
8316	HORMATHIA SP.	HORMATHIA SP.
8317	BOLOCERA SP.	BOLOCERA SP.
8318	PENNATULA BOREALIS	SEA PEN
8319	ACTINAUGE VERRILLII	A. VERRILLII

8320	CERIANTHUS BOREALIS	C. BOREALIS
8321	EPIZOANTHUS INCRUSTATUS	E. INCRUSTATUS
8322	PRIMNOA RESEDAEFORMIS	P. RESEDAEFORMIS
8323	PARAGORGIA ARBOREA	PARAGORGIA ARBOREA
8324	DUVA MULTIFLORA	SEA CAULIFLOWER
8400	HYDROZOA C.	HYDROZOA C.
8405	SERTULARIA SP.	GARLAND HYDROIDS
8411	AGLANTHA DIGITALE	AGLANTHA DIGITALE
8421	OBELIA SP.	HYDROMEDUSAE
8500	SCYPHOZOA C.	JELLYFISHES
8511	CYANEA CAPILLATA	PINK JELLYFISH
8520	PELAGIA NOCTILUCA	JELLYFISH
8600	PORIFERA P.	SPONGES
8610	POLYMASTIA SP.	POLYMASTIA SP.
8615	MYCALE SP.	MYCALE SP.
8618	HALICLONA SP.	HALICLONA SP.
8621	HALICLONA OCULATA	EYED SPONGE
8622	HORMATHIA TUBERCULOSA	H. TUBERCULOSA
8700	SIPHONOPHORA O.	SIPHONOPHORA O.
9000	UNID REMAINS,DIGESTED	UNID REMAINS
9001	UNID FISH AND INVERTEBRATES	UNID INVERTEBRATES
9002	UNID FISH AND REMAINS	UNID REMAINS
9003	UNID FISH AND EGGS	UNID FISH AND EGGS
9100	MUCUS	MUCUS
9200	STONES AND ROCKS	STONES AND ROCKS
9300	THALLOPHYTA C.	SEAWEED,(ALGAE),KELP
9301	FUCUS SP.	BROWN ROCKWEED
9302	ULVA SP.	SEA LETTUCE
9303	PHAEOPHYCEAE C.	BROWN SEAWEEDS
9304	RHODOPHYCEAE	RED SEAWEEDS
9400	FOREIGN ARTICLES,GARBAGE	FOREIGN ARTICLES,GARBAGE
9405	INSECTA C.	LAND INSECTS
9406	DIPTERA O.	DIPTERA O.
9410	AVES C.	G.LAND BIRD
9430	CHELONIA O.	TORTOISES AND SEA GOING TURTLES
9500	MUD	MUD
9600	WATER	WATER
9700	SAND	SAND
9800	OIL(CRUDE)	OIL (CRUDE)
9900	EMPTY	EMPTY

APPENDIX IV.

CHARACTERISTICS OF SOME COMMONLY MISIDENTIFIED FISH SPECIES

Some common species consistently cause problems for onboard identification. The distinguishing characteristics for some of these species are given below. It is not expected that this will be a substitute for a good taxonomic monograph on North Atlantic fish (eg. Scott and Scott, 1988) which should be available on every cruise.

If in doubt, the specimen(s) must be preserved for positive identification in the laboratory. Unusual specimens (in size, distribution, colour, etc.) should also be preserved for further study by interested scientists.

1. Clupeid or herring-like fishes
(Scott and Scott, 1988)

Herring
- cluster of small vomerine teeth on roof of mouth
- belly outline not sharply saw-toothed but with a knife edge

Gaspereau (Alewife)
- peritoneum silvery
- eye diameter usually greater than snout length
- gill rakers on lower limb: 38-43

Blueback
- eye diameter usually less than snout length
- peritoneum darkly pigmented
- gill rakers on lower limb: 41-52

Shad
- posterior margins of scales rounded and smooth
- lower jaw fits into "notch" in upper jaw when mouth is closed
- gill rakers on lower limb more than 55 (57-73)

2. Hake
(Scott and Scott, 1988) (Musick, 1972)

Merluccius spp.(Silver hake and offshore hake)

These are very difficult to distinguish without counting gill rakers.

- silver hake have 15-22 gill rakers and offshore hake have 9-11.
- silver hake have 103-130 lateral line scales versus 130-148 for the offshore hake
- offshore hake often have a dark-brown to black peritoneum.

Urophycis spp (Red and white hake)

These are quite difficult to distinguish without counting gill rakers or lateral line scales. **The occurence of red hake in the Gulf of St. Lawrence has not been substantiated.**

Red hake
- three gill rakers on upper limb of 1st gill arch
- lateral line scales: 95-117
- usually less than 50 cm. long

White hake
- two gill rakers on upper limb of 1st gill arch
- lateral line scales:119-148

3. Skate
(McEachran and Martin, 1978)(Scott and Scott, 1988)

Winter (Eyed) skate
- found in the Gulf of St. Lawrence
- attains length over 53 cm
- males have prickles on ventral surface near the cloacal opening
- females also have prickles on ventral surface but well out on pelvic fin
- teeth in upper jaw in 72-110 rows (usually 90-100)
- snout blunt having an angle greater than 130°

Little skate
- **occurence in the Gulf of St. Lawrence not substantiated**
- mature specimens seldom over 53 cm
- no prickles on ventral surface of males
- prickles on ventral surface of females near cloacal opening
- teeth in upper jaw in 39-64 rows (usually less than 54)
- snout blunt having an angle greater than 90°

Other less common groups that cause problems include the rocklings, sculpins, grenadiers and small eel-like fishes such as the gunnels, blennies, and shannies.

These should be carefully keyed out using a good taxonomic reference book or preserved if they cannot be identified to species.

4. Eelpouts (Liem and Scott, 1966)

These species are currently undergoing taxonomic revision at the Atlantic Reference Center, St. Andrews, N.B. Many of the proposed new distinctions are based on pigmentation patterns. In the interim the following has been used to seperate Vahl's eelpout from the Arctic eelpout.

Vahl's
- distance from the vent to the tip of the tail is over 55% of the total length
- single ventral lateral line distinct, mid-lateral line absent
- dorsal fin rays vary from 104-112
- 1 or more "sooty" patches on the forward part of the dorsal fin
- variable number (7-12) of blackish, vertical bands extending from the mid-pectoral fin to the tip of the tail (number is less in adults)

Arctic
- distance from the vent to the tip of the tail is not over 55% of the total length
- single, median lateral line not very distinct
- dorsal fin rays less than 90
- 8-10 dark bands which are narrower than the light bands
- light band on the nape of the neck

APPENDIX V

CRABS OF THE SCOTIAN SHELF, GULF OF ST. LAWRENCE AND BAY OF FUNDY

modified from - R.W. Elner (1985)

See above Underwater World for more detailed information including primary claw descriptions and figures.

1) **ROCK CRAB (Cancer irroratus)**

Distribution - Labrador to south Carolina; from low water to 600 meters. Most abundant in shallow water, especially in bays and in the southern Gulf of St. Lawrence, although common along the outer coastline of Nova Scotia and in the Bay of Fundy.

Description (Figure V.1) - Nine, shallow, smooth-edge marginal teeth along each side of the front edge of the carapace; marginal teeth pointed at widest part of carapace; surface of claws and carapace relatively smooth (compared to Johah crab); background colour variable above, generally yellow brown, but can be violet especially on rocky bottom; pale yellow underneath; up to about 12 cm carapace width and 450 g in weight.

2) **JONAH CRAB (Cancer borealis)**

Distribution - Nova Scotia to South Carolina; from low water to over 800 meters. Dominant crab species at intermediate depths away from shore off southwestern Nova Scotia; present in the Bay of Fundy. **Not recorded from Gulf of St. Lawrence.**

Description (Figure V.2) - Similar to rock crab, but carapace outline more rounded, legs relatively shorter and claws are larger than rock crab; nine, rectangular, rough-edged marginal teeth on each side of the front edge of the carapace; surface of claws and carapace rough; background colour variable but generally yellow-brown above and yellowish below. Up to approximately 18 cm carapace width and 600 g in weight.

3) **SNOW CRAB (Chionoecetes opilio)**

Distribution - West Greenland to Maine and from Alaska to Siberia; from 50 to over 700 meters. Abundant on soft bottom around Cape Breton and in the western Gulf of St. Lawrence, especially from 80 to 300 meters.

Description (Figure V.3) - Somewhat flattened walking legs that are 2-3 times as long as carapace; almost circular carapace; pale brownish above, yellowish below; males reach a maximum carapace width of 15 cm, a leg spread of approximately 90 cm and a weight of 2 kg.

4) **NORTHERN STONE CRAB (Lithodes maia)**

Distribution - Newfoundland to New Jersey and northwestern Europe; from 70 to 600 meters. In the Gulf of St. Lawrence, it appears to live in deeper, warmer water than the snow crab. Occurs in Bay of Fundy and on the Scotian Shelf. Very abundant in patches at intermediate depths.

Description (Figure V.4) - Resembles snow crab in size and general shape but readily identified by the numerous prominent spines on its carapace and legs; carapace slightly longer than wide; long spiny rostrum; orange/red in colour; only 3 pairs of walking legs apparent. Up to approximately 10 cm carapace width with a leg spread of 60 cm and weight of 1400 g.

5) **SPINY SPIDER CRAB (Neolithodes grimaldi)**

Distribution - Both sides of the North Atlantic; 120 to 800 meters. Common in patches at intermediate depths on the Scotian Shelf. **Not recorded from Gulf of St. Lawrence or Bay of Fundy.**

Description (Figure V.5) - Similar to northern stone crab but extremely prominent spines on carapace and appendages. Reaches a maximum carapace width of approximately 10 cm, a leg spread of 80 cm and a weight of 1400 g.

6) **TOAD CRAB (Hyas sp.)**

Distribution - Very common in places; widespread on both sides of the North Atlantic; from low water to about 600 meters; in Gulf of St. Lawrence and around **Cape Breton mostly at intermediate depths between rock and snow crab zones.**

6) TOAD CRAB (Hyas sp.) con't

Description (Figure V.6) -Uneven carapace surface; 4 pairs of round, tubular walking legs. Carapace approximately 1.3 times longer than wide; up to a maximum carapace width of about 9 cm and a spread of 45 cm; maximum weight approximately 750 g.

7) RED CRAB (Geryon quinquedens)

Distribution - Nova Scotia to Cuba; commonly from depths of 100 to 1400 meters. Very abundant in patches along the edge of continental shelf from western Scotian Shelf to Georges Bank. **Does not occur in the Gulf of St. Lawrence.**

Description (Figure V.7) -Carapace squarish; usually reddish or deep orange; five marginal teeth along each side of the carapace; walking legs long and slender; males reach a maximum carapace width of approximately 17 cm and a weight of nearly 1400 g.

Figures for Appendix V

Figure V.1. Rock crab (Cancer irroratus).

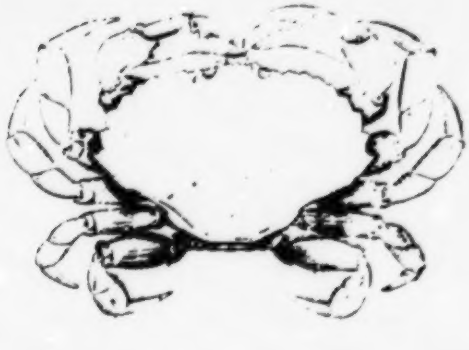


Figure V.2. Jonah crab (Cancer borealis).

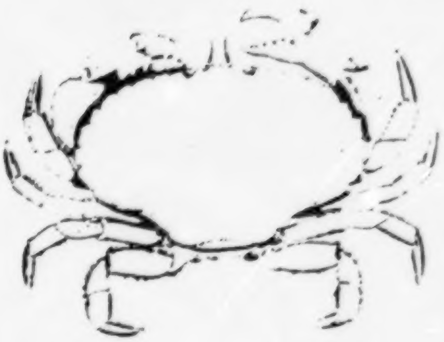


Figure V.3. Snow crab (Chionoecetes opilio).

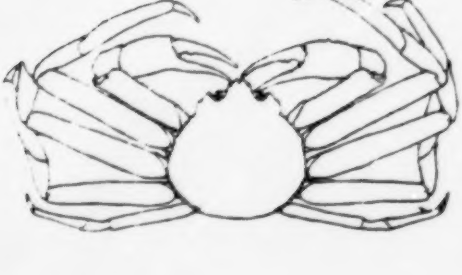
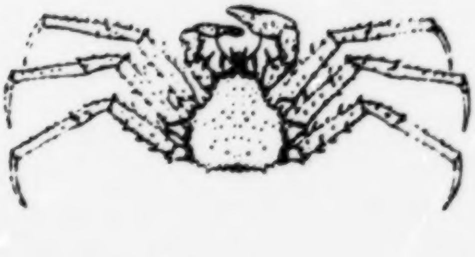


Figure V.4. Northern stone crab (Lithodes maja).
(also called northern snow crab)



Figures for Appendix V (cont'd.)

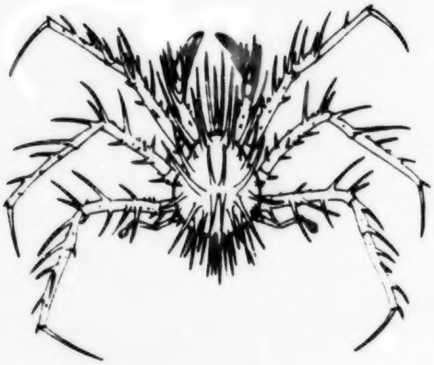


Figure V.5. Spiny spider crab (Neolithodes grimaldi).

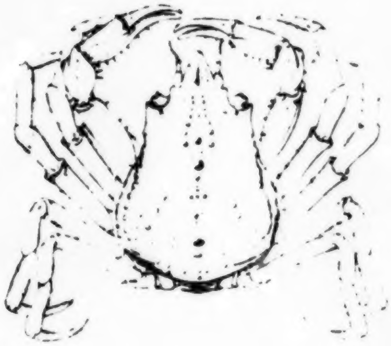


Figure V.6. Toad crab (Hyas sp.).

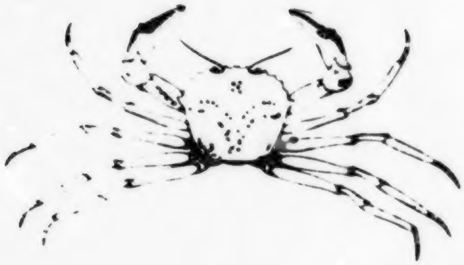


Figure V.7. Red crab (Geryon quinquedens).